

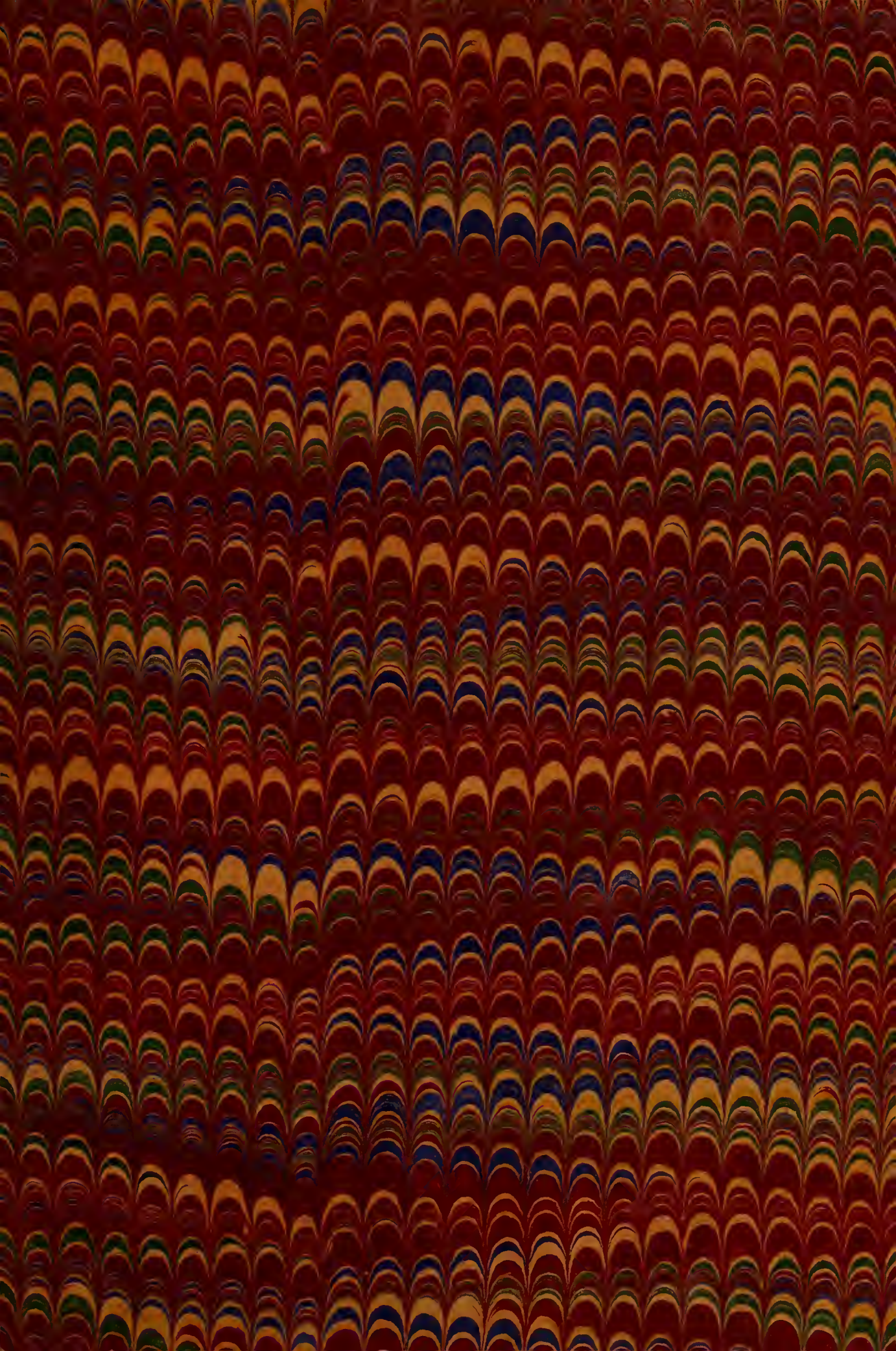
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UNITED STATES OF AMERICA.



OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

S U P P L E M E N T

CONTAINING THE

REVISED CLASSIFICATION OF SUBJECTS OF INVENTION,

ALPHABETICALLY ARRANGED.

JANUARY 1, 1889.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.

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DEPARTMENT OF THE INTERIOR,

UNITED STATES PATENT OFFICE,

Washington, D. C., January 1, 1889.

The following is the official classification of patents and inventions in the Patent Office. No changes will be made therein except by order of the Commissioner.

Should occasion arise for any modification of this classification, either by the discontinuance of any title or by the addition of a new one, the matter will be presented to the Commissioner for his action.

Examiners will not transfer patented drawings from one class or sub-class to another except on the Commissioner's approval.

Changes in classes and sub-classes will be published in the OFFICIAL GAZETTE.

BENTON J. HALL,

Commissioner of Patents.

CLASSIFICATION OF INVENTIONS.

REVISED AND APPROVED BY THE UNITED STATES PATENT OFFICE JANUARY 1, 1889.

All inventions are classified in the United States Patent Office.

The present classification, revised January 1, 1889, contains one hundred and eighty-eight classes, subdivided into over four thousand sub-classes.

Persons desiring to inform themselves in regard to the state of the art in any line of invention can best do so by purchasing printed copies of the specifications and drawings of patents in the sub-class containing the invention, the number and cost of which will be given upon application.

Those wishing to subscribe for the printed copies of specifications and drawings of future patents in any sub-class may do so by depositing any amount from five dollars upward, the sum depending upon the size of the sub-class. The copies will then be mailed to them weekly, at the rate of ten cents each, until the deposit shall have become exhausted, when notice will be duly sent for renewal of deposit, if desired.

Orders for specifications and drawings by classes should give the numbers as well as the titles of the class and sub-class.

Orders for single patents should give the number and date of the patent and the name of the inventor.

SPECIFICATIONS of patents issued since June 10, 1862, commencing with No. 35,520, have been printed up to this date; also, all pat-

ents previously issued for processes, and in the classes of Arms and Projectiles, Brakes and Gins, Distillation, Electricity, Fire-Arms, Fishing and Trapping, Harrows and Diggers, Harvesters, Injectors and Ejectors, Marine Propulsion, Metal-Founding, Ordnance, Packing and Storing Vessels, Plows, Projectiles, Seeders and Planters, Sewing-Machines, Sheet-Metal-Ware Making, Steam and Vacuum Pumps, Steam Water-Elevators, Sugar and Salt, Tobacco, Trees, Plants and Flowers, and Wire-Working, and the sub-classes of Bale-Band Tighteners, Bale-Ties, Cane-Mills, Cane-Strippers, Car-Seats, Cotton and Hay Presses, Tobacco-Driers, Tobacco-Elevators, Time-Locks, and Type-Writing.

DRAWINGS of all patents, from earliest to present date, have been photolithographed, with a few exceptions.

The cost of copies of drawings with the specifications, if printed, when ordered in quantities of twenty or more, is ten cents per copy. If the specification has not been printed, an additional cost of ten cents per hundred words for a manuscript copy of it will be charged.

For the convenience of those who do not desire to order as many as twenty copies at one time, coupon orders, good for one drawing and printed specification, are sold in quantities of twenty or more, at ten cents each. These may be used singly and are good till used.

CLASSES ALPHABETICALLY ARRANGED.

Number.	Class.	Division.	Number.	Class.	Division.
150	Accouterments and baggage	22	67	Lamps and gas-fittings	30
181	Acoustics	23	68	Laundry	27
40	Advertising	22	69	Leather	11
1	Aeration and bottling	9	70	Locks and latches	20
123	Air and gas engines	18	154	Lubricators	12
2	Apparel	24	74	Machine elements	12
56	Arms and projectiles. Making	13	115	Marine propulsion	22
166	Artesian and oil wells	15	72	Masonry	4
3	Artificial limbs	20	73	Measuring-instruments	23
106	Artificial stone, lime, and cement	15	185	Mechanical motors	12
4	Baths and closets	9	167	Medicines	6
5	Beds	8	153	Metal-bending	14
6	Bee-culture	2	10	Metal bolts, nuts, rivets, and screws	13
8	Bleaching and dyeing	6	77	Metal boring and drilling	13
9	Boats	22	78	Metal-forging	13
11	Book-binding	5	22	Metal-founding	14
12	Boots and shoes	11	75	Metallurgy	3
13	Brakes and gins	21	79	Metal personal wear. Making	13
107	Bread, cracker, and lozenge making	8	80	Metal-rolling	13
7	Brewing and fermenting	3	148	Metal tempering, annealing, and cementation	3
14	Bridges	4	76	Metal tools and implements. Making	13
15	Brushing and scrubbing	27	134	Metal tubing and wire	13
16	Builders' hardware	20	82	Metal turning, planing, and milling	13
17	Butchering	2	81	Metal-working tools	28
18	Caoutchouc and minor plastics	15	83	Mills	25
19	Carding	21	84	Music	5
119	Care of live stock	2	85	Nails and spikes	13
20	Carpentry	29	163	Needles and pins	13
21	Carriages and wagons	10	151	Nut and bolt locks	28
59	Chains, staples, and horseshoes	13	87	Oils, fats, and glue	6
155	Chairs	8	88	Optics	23
23	Chemicals	6	89	Ordnance	22
24	Clasps and buckles	11	150	Packing and storing vessels	14
25	Clay and pottery	15	91	Painting	6
26	Cloth-finishing	21	92	Paper-making	15
96	Coating with metal	3	93	Paper-manufactures	17
154	Composite roofing	15	94	Paving	15
147	Coopering	29	95	Photography	5
28	Cordage	21	97	Plows	1
29	Crinoline and corsets	24	98	Pneumatics	28
156	Curtains, shades, and screens	8	99	Preserving	6
30	Cutlery	20	100	Presses	2
31	Dairy	2	101	Printing	17
32	Dentistry	20	102	Projectiles	22
165	Designs	24	103	Pumps	9
124	Distillation	3	164	Punching and shearing	13
33	Drafting	23	105	Railway cars	10
34	Driers	28	104	Railways	4
35	Educational appliances	23	62	Refrigeration	28
171	Electricity. Generation	26	108	Roofing	4
172	Electricity. Motive-power	26	109	Safes	20
173	Electricity. Conductors	26	111	Seeders and planters	1
171	Electricity. Medical and surgical	26	182	Sewerage	4
175	Electricity. Special applications	26	112	Sewing-machines	24
176	Electric lighting	16	113	Sheet-metal ware. Making	14
177	Electric signaling	16	114	Ships	22
177	Elevators	12	116	Signals	22
37	Excavating	4	117	Silk	21
52	Explosives	6	118	Spinning	21
168	Farriery	28	120	Stationery	5
38	Felting and hat-making	15	160	Steam and vacuum pumps	18
39	Fences	1	122	Steam-boilers	18
71	Fertilizers	6	110	Steam-boiler furnaces	18
41	Fine arts	5	121	Steam-engines	18
42	Fire-arms	22	136	Steam-engine valves	18
169	Fire-extinguishers	9	161	Steam water-elevators	18
159	Fire escapes and ladders	4	125	Stone-working	15
183	Fire-proof buildings	4	186	Store service	12
43	Fishing and trapping	22	126	Stoves and furnaces	19
185	Fluid-pressure railway-brakes	15	127	Sugar and salt	2
50	Fluid-pressure regulators	18	128	Surgery	20
41	Fuel	6	129	Tanning	11
45	Furniture	8	178	Telegraphy	16
46	Games and toys	8	179	Telephony	16
48	Gas	3	130	Thrashing	25
49	Glass	15	131	Tobacco	2
51	Grinding and polishing	27	132	Toilet	5
53	Hardware-making	13	47	Trees, plants, and flowers	2
51	Harness	11	135	Umbrellas and canes	5
55	Harrows and diggers	1	27	Undertaking	20
56	Harvesters	7	146	Vegetable cutters and crushers	2
149	Hides, skins, and leather. Chemical treatment of	6	152	Wagon, car, and track irons	13
57	Hoisting	12	141	Washing apparatus	27
53	Horology	23	137	Water-distribution	9
60	Hose and belting	11	139	Weaving	21
61	Hydraulic engineering	4	157	Wheelwright-machines	29
138	Hydraulic motors	9	170	Wind-wheels	28
162	Injectors and ejectors	15	140	Wire-working	14
63	Jewelry	5	143	Wood-sawing	29
64	Journal-boxes, pulleys, and shafting	12	142	Wood-turning	29
65	Kitchen and table articles	8	144	Wood-working machines	29
66	Knitting and netting	21	145	Wood-working tools	29

CLASSES NUMERICALLY ARRANGED.

Number.	Class.	Division.	Number.	Class.	Division.
1	Aeration and bottling	9	95	Photography	5
2	Apparel	24	96	Coating with metal	3
3	Artificial limbs	20	97	Plows	1
4	Baths and closets	9	98	Pneumatics	28
5	Beds	8	99	Preserving	6
6	Bee-culture	2	100	Presses	2
7	Brewing and fermenting	3	101	Printing	17
8	Bleaching and dyeing	6	102	Projectiles	22
9	Boats	22	103	Pumps	9
10	Metal bolts, nuts, rivets, and screws	13	104	Railways	4
11	Book-binding	5	105	Railway-cars	10
12	Boots and shoes	11	106	Artificial stone, lime, and cement	15
13	Brakes and gins	21	107	Bread, cracker, and lozenge making	8
14	Bridges	4	108	Roofing	4
15	Brushing and scrubbing	27	109	Safes	20
16	Builders' hardware	20	110	Steam-boiler furnaces	18
17	Butchering	2	111	Seeders and planters	1
18	Caoutchouc and minor plastics	15	112	Sewing-machines	24
19	Carding	21	113	Sheet-metal ware. Making	14
20	Carpentry	29	114	Ships	22
21	Carriages and wagons	10	115	Marine propulsion	22
22	Metal-founding	14	116	Signals	22
23	Chemicals	6	117	Silk	21
24	Clasps and buckles	11	118	Spinning	21
25	Clay and pottery	15	119	Care of live stock	2
26	Cloth-finishing	21	120	Stationery	5
27	Undertaking	20	121	Steam-engines	18
28	Cordage	21	122	Steam-boilers	18
29	Crinoline and corsets	24	123	Air and gas engines	18
30	Cutlery	20	124	Distillation	3
31	Dairy	2	125	Stone-working	15
32	Dentistry	20	126	Stoves and furnaces	19
33	Drafting	23	127	Sugar and salt	2
34	Driers	28	128	Surgery	20
35	Educational appliances	23	129	Tanning	11
37	Excavating	4	130	Thrashing	25
38	Felting and hat-making	15	131	Tobacco	2
39	Fences	1	132	Toilet	5
40	Advertising	22	134	Metal tubing and wire	13
41	Fine arts	5	135	Umbrellas and canes	5
42	Fire-arms	22	136	Steam-engine valves	18
43	Fishing and trapping	22	137	Water-distribution	9
44	Fuel	6	138	Hydraulic motors	9
45	Furniture	8	139	Weaving	21
46	Games and toys	8	140	Wire-working	14
47	Trees, plants, and flowers	2	141	Washing apparatus	27
48	Gas	3	142	Wood-turning	29
49	Glass	15	143	Wood-sawing	29
50	Fluid-pressure regulators	18	144	Wood-working machines	29
51	Grinding and polishing	27	145	Wood-working tools	29
52	Explosives	6	146	Vegetable cutters and crushers	2
53	Hardware-making	13	147	Coopering	29
54	Harness	11	148	Metal tempering, annealing, and cementation	3
55	Harrows and diggers	1	149	Hides, skins, and leather. Chemical treatment of	6
56	Harvesters	7	150	Packing and storing vessels	14
57	Hoisting	12	151	Nut and bolt locks	28
58	Horology	23	152	Wagon, car, and track irons	13
59	Chains, staples, and horseshoes	13	153	Metal bending	14
60	Hose and belting	11	154	Composite roofing	15
61	Hydraulic engineering	4	155	Chairs	8
62	Refrigeration	28	156	Curtains, shades, and screens	8
63	Jewelry	5	157	Wheelwright-machines	29
64	Journal-boxes, pulleys, and shafting	12	159	Fire escapes and ladders	4
65	Kitchen and table articles	8	160	Steam and vacuum pumps	18
66	Knitting and netting	21	161	Steam water-elevators	18
67	Lamps and gas-fittings	30	162	Injectors and ejectors	18
68	Laundry	27	163	Needles and pins	13
69	Leather	11	164	Punching and shearing	13
70	Locks and latches	20	165	DESIGNS	24
71	Fertilizers	6	166	Artesian and oil wells	15
72	Masonry	4	167	Medicines	6
73	Measuring-instruments	23	168	Farriery	28
74	Machine elements	12	169	Fire-extinguishers	9
75	Metallurgy	3	170	Wind-wheels	28
76	Metal tools and implements. Making	13	171	Electricity. Generation	26
77	Metal boring and drilling	13	172	Electricity. Motive-power	26
78	Metal-forging	13	173	Electricity. Conductors	26
79	Metal personal wear. Making	13	174	Electricity. Medical and surgical	26
80	Metal-rolling	13	175	Electricity. Special applications	26
81	Metal-working tools	28	176	Electric lighting	16
82	Metal turning, planing, and milling	13	177	Electric signaling	16
83	Mills	25	178	Telegraphy	16
84	Music	5	179	Telephony	16
85	Nails and spikes	13	180	Accouterments and baggage	22
86	Arms and projectiles. Making	13	181	Acoustics	23
87	Oils, fats, and glue	6	182	Sewerage	4
88	Optics	23	183	Fire-proof buildings	4
89	Ordnance	22	184	Lubricators	12
91	Painting	6	185	Mechanical motors	12
92	Paper-making	15	186	Store service	12
93	Paper-manufactures	17	187	Elevators	12
94	Paving	15	188	Fluid-pressure railway-brakes	18

SUB-CLASSES.

CLASS 180.—ACCOUTERMENTS AND BAGGAGE. (XXII.)

Sub-classes.

- | | |
|---|---------------------------------|
| 1. Accouterments. | 4. Mail-bags. |
| 2. Awnings. | 10. Musicians' cases. |
| 11. Bayonets, scabbards, and sword-belts. | 5. Package-holders. |
| 12. Camp and lunch kits. | 6. Portfolios and pocket-books. |
| 13. Canteens and flasks. | 8. Tents. |
| 3. Cartridge boxes and belts. | 9. Traveling-bags. |
| 14. Hat and fur cases. | 10. Trunks— |
| 15. Knapsacks and haversacks. | 17. Convertible. |

CLASS 181.—ACOUSTICS. (XXIII.)

Sub-classes.

- | | |
|---------------------------|-------------------|
| 1. Andiphones. | 5. Miscellaneous. |
| 2. Ear-trumpets. | 4. Phonographs. |
| 3. Mechanical telephones. | |

CLASS 40.—ADVERTISING. (XXII.)

Sub-classes.

- | | |
|----------------------------|----------------------------|
| 1. Articles. | 9. Labels. |
| 2. Automatic devices. | 10. Label-holders. |
| 3. Card-racks. | 17. Map-holders. |
| 19. Counters and shelves. | 11. Picture-exhibitors. |
| 4. Desks and frames. | 12. Show boxes and cards. |
| 5. Door and drawer plates. | 13. Show-cases. |
| 6. Dummies and hangers. | 16. Show stands and racks. |
| 8. Indicators— | 14. Signs. |
| 18. Time. | |

CLASS 1.—AERATION AND BOTTLING. (IX.)

Sub-classes.

- | | |
|---------------------------|---------------------------|
| 12. Beer apparatus. | 7. Gas-generators. |
| 3. Capping-machines. | 11. Sirup-fountains. |
| 5. Corking and filling. | 9. Soda-fountains. |
| 14. Dispensing-fountains. | 10. Soda-water apparatus. |

CLASS 123.—AIR AND GAS ENGINES. (XVIII.)

Sub-classes.

- | | |
|-----------------|---------------|
| 5. Attachments. | Engines— |
| Engines— | 3. Explosive, |
| 1. Air, | 4. Gas. |
| 2. Caloric, | |

CLASS 2.—APPAREL. (XXIV.)

Sub-classes.

- | | |
|---------------------------|---------------------------------|
| 34. Armpit-shields. | 39. Needle-threaders. |
| 30. Bounets. | 40. Nether garments. |
| 1. Capes and shawls. | 13. Pin and needle cases. |
| 2. Coats and vests. | 14. Pinking. |
| 3. Collars and cuffs. | 16. Plaiting. |
| 35. Combination garments. | 15. Pockets. |
| 4. Cutting. | 18. Sewing. |
| 36. Darning-lasts. | 41. Shirts. |
| 5. Diapers. | 20. Skirt-elevators. |
| 6. Embroidery-patterns. | 42. Skirts. |
| 37. Garment-protectors. | 23. Stockings. |
| 8. Garters and belts. | 22. Stretchers and formers. |
| 9. Gloves. | 43. Supplemental bosoms. |
| 10. Handkerchiefs. | 25. Tailoring. |
| 31. Hats and caps. | 29. Thimbles. |
| 32. Hat-sweats. | 44. Thread holders and cutters. |
| 33. Hat-ventilators. | 26. Trimmings. |
| 38. Muffs and mufflers. | 27. Work-boxes. |
| 11. Neckties. | 45. Work-holders. |
| 28. Needles. | |

CLASS 86.—ARMS AND PROJECTILES. MAKING (XIII.)

Sub-classes.

- | | |
|----------------------|-------------------------|
| 1. Arms. | 4. Cartridges and caps. |
| 2. Bullets and shot. | 5. Gun-barrels. |
| 3. Cannon and ball. | 7. Rifling. |

CLASS 166.—ARTESIAN AND OIL WELLS. (XV.)

Sub-classes.

- | | |
|-------------------------|------------------------|
| 1. Casing-heads. | 6. Reamers. |
| 2. Cleaning. | 10. Sucker-rods. |
| 3. Drilling and boring. | 7. Tube-clamps. |
| 4. Drill-jars. | 8. Tubing and packing. |
| 5. Drill-rod grabs. | 9. Walking-beams. |

CLASS 3.—ARTIFICIAL LIMBS. (XX.)

Sub-classes.

- | | |
|--------------------|------------------------|
| 1. Arms and hands. | 2. Fracture apparatus. |
| 4. Crutches. | 3. Legs. |

CLASS 106.—ARTIFICIAL STONE, LIME, AND CEMENT. (XV.)

Sub-classes.

- | | |
|-----------------|----------------|
| 1. Composition. | 5. Plastering. |
| 3. Limekilns. | 6. Processes. |
| 4. Molds. | |

CLASS 4.—BATHS AND CLOSETS. (IX.)

Sub-classes.

- | | |
|-----------------------|---------------------------------|
| 1. Basins and stands. | Water-closets— |
| 2. Bathing apparatus. | 16. Plunger, |
| 19. Bed-pans. | 22. Siphon, |
| 5. Closet-cisterns. | 17. Valved. |
| 20. Dry closets. | 18. Water-closet attachments. |
| 11. Sinks and traps. | 15. Water-closet valves. |
| 12. Urinals. | 21. Water-closet and sewer ven- |
| 13. Vapor-baths. | tilation. |

CLASS 5.—BEDS. (VIII.)

Sub-classes.

- | | |
|--------------------------------|---------------------------------|
| Beds— | Bedsteads— |
| 1. Air, | 16. Sofa, |
| 5. Camp. | 17. Table, |
| Bed-bottoms— | 18. Wardrobe. |
| 23. Folding, | 22. Clothes-clamps. |
| 24. of cords, | 6. Cording and fastenings. |
| 25. of slats, | 7. Crib attachments. |
| 26. of slats and springs, | 20. Cribs and cradles. |
| 29. of springs, | 10. Hammocks. |
| 19. of wire and other fabrics. | 11. Head-sections. |
| 3. Bed-clothing. | 13. Mattresses. |
| 4. Bedsteads— | 14. Mosquito-nets and canopies. |
| 8. Extension, | 15. Pillows. |
| 9. Folding, | 21. Springs. |
| 12. Invalid, | |

CLASS 6.—BEE-CULTURE. (II.)

Sub-classes.

- | | |
|---------------|---------------------|
| 1. Bee-hives. | 2. Hive appliances. |
|---------------|---------------------|

CLASS 8.—BLEACHING AND DYEING. (VI.)

Sub-classes.

- | | |
|--------------------------------------|------------------------------|
| 16. Apron vats and stretchers. | 7. Press-dyeing. |
| 2. Bleaching. | 8. Renovating dress. |
| 1. Carbon dyes. | 18. Vats. Close |
| 5. Dyeing processes. | 19. Vats. Open |
| 6. Dyes. | 15. Steam and bleach chests. |
| 13. Mordants. | 12. Wool-cleaning. |
| 17. Perforated rolls and spray-jets. | |

CLASS 9.—BOATS. (XXII.)

Sub-classes.

- | | |
|---------------------------------------|---------------------------|
| 1. Boat hooks and fenders. | 6. Life-preservers. |
| 2. Building. | 7. Oars and oar-locks. |
| 3. Buoys and safes. | 8. Rafting and booming. |
| 4. Detaching, hoisting, and lowering. | 9. Sectional and folding. |
| 5. Life boats and rafts. | 10. Swimming appliances. |

CLASS 11.—BOOK-BINDING. (V.)

Sub-classes.

- | | |
|---------------------------|------------------------|
| 1. Albums. | 7. Indexing. |
| 2. Binding-machines. | 9. Newspaper-files. |
| 3. Books and covers. | 8. Ruling-machines. |
| 4. Book-cover protectors. | 10. Temporary binders. |
| 5. Book-cutting. | 11. Writing-tablets. |
| 6. Book-stapling. | |

CLASS 12.—BOOTS AND SHOES. (XI.)

Sub-classes.

- | | |
|----------------------------------|---------------------------------------|
| 2. Boot-jacks. | 11. Pegs. |
| 30. Boot-treeling machines. | 12. Pegging-jacks. |
| 3. Boot-trees. | 13. Pegging-machines, Nails and pegs— |
| 4. Burnishing. | Wire. |
| 24. Channeling-machines. | 35. Wire. |
| 5. Crimping. | 14. Rubber. |
| 6. Edge-planes and shaves. | 15. Shanks and machines. |
| 28. Glove and corset fastenings. | 16. Shoe-fastenings. |
| 32. Hand nailing implements. | 17. Soles. |
| 34. Heel-machines. | 18. Sole and heel trimming machines. |
| 33. Heel-nailing machines. | |
| 29. Heel-stiffener machines. | 19. Sole-machines. |
| 7. Heels. | 26. Sole and heel plates. |
| 8. Ice-creepers. | 20. Tips and stiffeners. |
| 9. Lasts. | 21. Tools. |
| 10. Lasting-machines. | 22. Uppers. |
| 25. Lasting and lasting tools. | 23. Upper-machines. |
| 31. Peg-floats. | |

CLASS 13.—BRAKES AND GINS. (XXI.)

Sub-classes.

- | | |
|----------------------------|--------------------------|
| 10. Delinting cotton-seed. | 5. Processes. |
| 1. Gin attachments. | 6. Reciprocating brakes. |
| 2. Hackling-machines. | 7. Roller-gins. |
| 3. Hair-pickers. | 8. Rotary brakes. |
| 4. Oakum-machines. | 9. Saw-gins. |

CLASS 107.—BREAD, CRACKER, AND LOZENGE MAKING. (VIII.)

Sub-classes.

- | | |
|--------------------------------|-------------------------------|
| 1. Bread and cracker machines. | 2. Pastry-boards. |
| 3. Cake-cutters. | 7. Pie crimpers and trimmers. |
| 6. Lozenge-machines. | 8. Rolling-pins. |
| 4. Mixers and kneaders. | |

CLASS 7.—BREWING AND FERMENTING. (III.)

Sub-classes.

- | | |
|-------------------------|------------------------------|
| 9. Fermented beverages. | 5. Mash-heaters. |
| 1. Fermenting-vats. | 6. Preserving beer and wine. |
| 8. Hop-backs. | 7. Purifying beer and wine. |
| 3. Malting. | 10. Wine. |
| 4. Mashing. | |

Sub-Classes in Brewing and Fermenting, with Explanatory Notes.

9. FERMENTED BEVERAGES. Includes all fermented beverages except beer or wine.
1. FERMENTING-VATS. Processes of and apparatus for fermenting; also, for the preparation of yeast.
8. HOP-BACKS. Devices for straining hops from beer.
3. MALTING. Processes of and apparatus for the germination of grain for the production of malt.
4. MASHING. Processes of and apparatus for the production of wort.
5. MASH-HEATERS. Apparatus for boiling the wort.
6. PRESERVING BEER AND WINE. Processes of and apparatus for imparting "keeping" properties to beer and wine.
7. PURIFYING BEER AND WINE. Clarifying beer and wine and analogous processes.
10. WINE. Processes of and apparatus for preparing wine.

CLASS 14.—BRIDGES. (IV.)

Sub-classes.

- | | |
|----------------|-------------------------|
| Bridges— | Bridges— |
| 7. Arch, | 6. Truss. |
| 1. Draw, | 2. Ferry-guards. |
| 9. Gates, | 3. Girders and columns. |
| 8. Floating, | 4. Piers. |
| 5. Suspension, | 10. Towers. |

CLASS 15.—BRUSHING AND SCRUBBING. (XXVII.)

Sub-classes.

- | | |
|----------------------------------|--------------------------------------|
| 1. Blacking box and brush cases. | 8. Carpet-cleaners. |
| 18. Blacking-box holders. | 60. Carpet-sweepers. |
| 61. Boot-blackening machines. | Chimney-cleaners— |
| 2. Boot-cleaners. | 41. Flue and stove-pipe, |
| 4. Broom-machines. | 42. Lamp. |
| Brooms— | 43. Combined mop heads and wringers. |
| 19. Broom-heads, | 44. Combined scrubbers and mops. |
| 20. Household, | 45. Dressing and assorting machines. |
| 21. Stable and yard, | Fountain-brushes— |
| 22. Whisk. | 46. Blacking, |
| 23. Brush and broom bridles— | 47. Broom, |
| 24. Handles, | 48. Hair, |
| 6. Supports. | 49. Paint, |
| 25. Brush-cleaners. | 51. Scrubbers, |
| Brush heads and faces— | 50. Shaving, |
| 26. Bath and flesh brushes, | 52. Tooth, |
| 27. Brush and broom fiber, | 53. Window-cleaners. |
| 28. Dusting-brushes, | Holders— |
| 29. Hair-brushes, | 54. Brush-head, |
| 30. Hat and clothes brushes, | 55. Convertible mop and brush, |
| 31. Horse-brushes, | 56. Mop-heads. |
| 32. Metal-cleaning brushes, | 57. Mops. |
| 33. Metallic tuft-fasteners, | 12. Mop-wringers. |
| 34. Molds and molded backs, | 14. Scrubbing-machines. |
| 35. Nail-brushes, | 15. Pails. |
| 36. Paint and whitewash brushes, | 58. Shoe-blackening stands. |
| 37. Rotary brushes, | 16. Shoe-brushes. |
| 13. Scrubbers, | 17. Street-sweepers. |
| 38. Shaving-brushes, | 59. Window-cleaners. |
| 39. Tooth-brushes. | |
| 7. Brush-machines. | |
| 40. Brush-trimming machines. | |

CLASS 16.—BUILDERS' HARDWARE. (XX.)

Sub-classes.

- | | |
|--------------------------------|------------------------------|
| 1. Blind-stops. | Hinges— |
| 2. Bolts. | 14. Safe, |
| 3. Carpet-fasteners. | 25. Spring, |
| 4. Casters— | 27. Table. |
| 45. Ball, | 50. Nail-heads. Ornamental |
| 21. Sewing-machine. | 15. Sash balances— |
| 6. Door-checks— | 18. Fasteners, |
| 46. Door checks and closers, | 19. Holders, |
| Pneumatic, | 20. Weights. |
| 47. Door-closers, Gravitating— | 16. Sash-eord fasteners— |
| 7. Hangers, | 17. Guides. |
| 8. Securers, | 22. Shutter bows— |
| 9. Springs. | 23. Fasteners, |
| 10. Handles. | 24. Workers. |
| 11. Hinges— | 26. Stair-rods and securers. |
| 48. Awning-blind, | 37. Till-alarms. |
| 5. Coach, | 28. Transom-lifters. |
| 49. Gate, | 29. Window-bead fasteners. |
| 12. Lock, | 30. Window and door buttons. |

CLASS 17.—BUTCHERING. (II.)

Sub-classes.

- | | |
|-----------------------------|--|
| 8. Butchers' stalls. | Meat-cutters— |
| 9. Chopping-blocks. | 21. Double-cylinder, |
| Dressing— | 22. Hand, |
| 10. Fish-dressing machines, | 23. Rocking-knife, |
| 11. Hog-scraping machines, | 24. Slicers, |
| 12. Intestine-cleaners, | 25. Trip mechanism. |
| 13. Skinning. | 26. Meat-mixers. |
| 14. Meat-clamps. | Meat-tenderers— |
| 15. Hooks. | 27. Hand, |
| Meat-cutters— | 28. Pivoted-head, |
| 16. Cracklings, | 29. Rotary. |
| 17. Crank mechanism, | 6. Sausage-machines. |
| 18. Cube, | 7. Scalding and singeing. |
| 19. Cylinder and block, | 30. Slaughtering, elevating, and suspending. |
| 20. Cylinder and concave, | |

CLASS 18.—CAOUTCHOUC AND MINOR PLASTICS. (XV.)

Sub-classes.

- | | |
|---------------------------|--------------------------------|
| 2. Articles. | 6. Machines for coating. |
| 1. Artificial ivory. | 7. Miscellaneous compositions. |
| 3. Celluloid. | 8. Soft rubber. |
| 4. Fabrics. | 9. Vulcanizing apparatus. |
| 5. Hard rubber. | 10. Vulcanized fiber. |
| 11. Insulating materials. | |

CLASS 19.—CARDING. (XXI.)

Sub-classes.

- | | |
|-------------------------------------|--------------------------|
| 1. Burring. | 14. Fleece-removers. |
| 2. Card-clothing. | 8. Lapping. |
| 3. Carding. | 9. Pickers. |
| 5. Coilers. | 15. Stripping mechanism. |
| 6. Combing. | 10. Wadding. |
| 12. Covering yarn. | 11. Wool oiling. |
| 7. Feeding-cards. | |
| 13. Fleece dividers and condensers. | |

CLASS 119.—CARE OF LIVE STOCK. (II.)

Sub-classes.

- | | |
|-----------------------------------|------------------------------|
| Animal-stocks— | Steading and feeding— |
| 14. Hog-traps, | 26. Stalls, sheds, and pens. |
| 15. Horse and cattle, | 53. Stock-cars. |
| 16. Sheep. | 27. Stock-sorters. |
| 46. Bird cages and houses. | Straw-cutters— |
| 17. Catching and holding tools. | Cutter and bed— |
| 48. Curry-combs. | 28. Reciprocating-knife, |
| 47. Gags and muzzles. | 29. Rotary-cylinder. |
| 18. Gangways. | 30. Cylinder and concave. |
| 3. Grooming. | 31. Double-cylinder. |
| 49. Hitching-posts and ties. | Pivoted-knife— |
| 51. Hopples. | 32. Rake-feed, |
| 4. Incubators. | 33. Roller-feed, |
| 52. Manure-pouches. | 34. Without feed. |
| 13. Nose-rings and ringing-tools. | Rotary wheel— |
| 12. Pokes. | 35. Follower-feed, |
| 5. Poultry-culture. | 36. Rake-feed, |
| 19. Sheep-protectors. | 37. Roller-feed, |
| 9. Stanchions. | 38. Without feed. |
| Steading and feeding— | Single-cylinder— |
| 20. Calf-feeders, | 39. Rake-feed, |
| 21. Combined troughs and racks, | 40. Roller-feed, |
| 22. Feed-racks, | 41. Without feed. |
| 23. Feed-troughs, | Sliding-knife— |
| 52. Nose-bags, | 42. Rake-feed, |
| 24. Releasing devices, | 43. Roller-feed, |
| 25. Stall-floors, | 44. Without feed. |
| | 50. Tethers. |

CLASS 20.—CARPENTRY. (XXIX.)

Sub-classes.

- | | |
|--------------------------|------------------------------|
| 34. Compound lumber. | Shutters— |
| 2. Doors— | 44. Sliding. |
| 23. Car. | 45. Swinging. |
| 24. Sliding. | 15. Skylights. |
| 3. Door-operating device | 16. Slatted floor-coverings. |
| 32. Drip-troughs. | 33. Splices and joints. |
| 4. Floors. | 17. Stairs. |
| 5. Frame houses. | 18. Stair-covers. |
| 7. Interiors. | 31. Thresholds. |
| 9. Lathing— | 19. Weather-strips— |
| 42. Metallic. | 35. Hinged. |
| 10. Marquetry. | 37. Sills. |
| 39. Mats— | 38. Packing. |
| 43. Wire. | 36. Sliding. |
| 26. Moldings. | Window— |
| 11. Portable houses. | 16. Chairs. |
| 12. Scaffolds— | 40. Guards. |
| 28. Bracket. | 47. Sashes— |
| 13. Shingling-brackets. | 18. Sliding. |
| 14. Shutters— | 50. Sliding and swinging. |
| 29. Flexible. | 19. Swinging. |
| 30. Fire-proof. | 20. Windows. |

CLASS 21.—CARRIAGES AND WAGONS. (X.)

Sub-classes.

- | | |
|----------------------------|--------------------------|
| 1. Ambulances. | 41. Seat-locks. |
| 2. Axle-boxes. | 42. Seats— |
| 3. Axle-lubricators. | 43. Shifting. |
| 4. Axle-skins. | 44. Spring. |
| 5. Axles. | 45. Shifting-rails. |
| 7. Bodies. | 75. Skates— |
| 8. Brakes. | 76. Roller. |
| 9. Brakes. Automatic | 77. Wheel. |
| 10. Brake-levers. | 74. Skaters' appliances. |
| 11. Carriage-irons. | 46. Sled-brakes. |
| 12. Children's carriages. | 47. Sled-propellers. |
| 13. Clips. | 48. Sleds. |
| 14. Close carriages. | 49. Spoke-sockets. |
| 15. Dash-boards. | 50. Springs— |
| 16. Detaching horses. | 51. Platform. |
| 17. Doors. | 52. Side. |
| 18. Draft-equalizers. | 53. Torsion. |
| 19. Drays. | 54. Standards. |
| 20. Dumping-wagons. | 55. Steps. |
| 21. End-gates. | 56. Sulkies. |
| 22. Fellies. | 57. Thrill-couplings. |
| 23. Fenders. | 58. Tires. |
| 24. Fifth-wheels. | 59. Tire-tighteners. |
| 26. Hearses. | 63. Tongue-supports. |
| 27. Holdbacks. | 60. Top-joints. |
| 28. Hose-carriages. | 61. Top-props. |
| 29. Hounds. | 62. Tops. |
| 30. Hub-attaching devices. | 64. Traction-wheels. |
| 31. Hubs. | 65. Trucks. |
| 32. King-bolts. | 67. Velocipedes. |
| 33. Lumber-wagons. | 68. Wheelbarrows. |
| 36. Poles and shafts. | 69. Wheels. |
| 38. Road-engines. | 70. Whiffletree-hooks. |
| 39. Running-gear. | 71. Whiffletrees. |
| 40. Sand-bands. | 73. Windows. |

CLASS 39.—CHAINS, STAPLES, AND HORSESHOES.

(XIII.)

Sub-classes.

- | | |
|----------------------------|------------------------|
| 1. Chains. | 6. Horseshoe-machines. |
| 2. Chain and link making. | 7. Staples. |
| 4. Horseshoe-bars. Making | 8. Staples. Making |
| 5. Horseshoe-calks. Making | |

CLASS 155.—CHAIRS. (VIII.)

Sub-classes.

- | | |
|---|-----------------------|
| 3. Chairs— | Chairs— |
| 26. Attachments. | 21. Step-ladder. |
| 27. Adjustable backs. | 23. Surgical. |
| 28. Adjustable backs and seats. | 24. Tilting. |
| 29. Backs and seats independently adjustable. | Rests— |
| 4. Bottoms. | 9. Foot. |
| 6. Convertible. | 10. Head. |
| 7. Dentists'. | Seats— |
| 8. Folding. | 2. Car. |
| 30. Folding adjustable. | 5. Circus. |
| 11. Invalid. | 25. Spring. |
| 12. Nursery. | 19. Settees. |
| 13. Opera. | 20. Sofas. |
| 16. Reclining. | 22. Stools and seats. |
| 17. Rocking— | 32. Stools. Folding |
| 31. Platform. | |

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CLASS 23.—CHEMICALS. (VI.)

Sub-classes.

- | | |
|--|--|
| 1. Acids. Mineral | 5. Fire-extinguishing compounds. |
| 21. Ammonia. | 10. Metalloids, embracing non-illuminating gases, sulphur, and phosphorus. |
| 3. Apparatus. | 11. Packing chemicals. |
| 24. Carbon compounds, not dyes, containing chiefly vinegar, salicylic acid, and other organic acids. | 26. Purifying water. |
| 23. Distilling wood. | 13. Salines. |
| 27. Electrolysis, containing only those cases in which the subject-matter is, producing chemical compounds by electricity. | 22. Soda and polish. |

CLASS 24.—CLASPS AND BUCKLES. (XI.)

Sub-classes.

- | | |
|--------------------------------------|-----------------------------|
| 26. Baggage-checks. | 7. Eyelets. |
| 23. Buckles and snap-hooks combined. | 8. Eyeletting-machines. |
| 1. Buckles— | 25. Garment-supporters. |
| 27. Personal wear. | 9. Hooks. |
| 2. Buttons— | 10. Hooks and eyes. |
| 23. Hinged shoe. | 11. Necktie-fasteners. |
| 21. Separable. | 13. Paper-fasteners. |
| 3. Buttoners. | 14. Punches. |
| 4. Button-fasteners. | 15. Rings. |
| 5. Button-machines. | 16. Safety attachments. |
| 29. Button-setting tools. | 17. Snap-hooks. |
| 6. Clasps. | 20. Suspenders. |
| 24. Cuff-holders. | 18. Tags and tag-fasteners. |
| | 19. Ticket-clasps. |

CLASS 25.—CLAY AND POTTERY. (XV.)

Sub-classes.

- | | |
|-------------------|---|
| 1. Bricks. | 10. Pottery articles. |
| 2. Brick-kilns. | 11. Pottery-kilns. |
| Brick-machines— | 12. Pottery-machines. |
| 4. Reciprocating. | 13. Pug-mills, clay-mills, and mortar-mixers. |
| 3. Rotary. | 14. Pulverizers. |
| 5. Screw. | 16. Sarcophagi. |
| 6. Brick-molds. | 17. Tile-machines. |
| 8. Drain-tiles. | |
| 9. Paving-tiles. | |

CLASS 26.—CLOTH-FINISHING. (XXI.)

Sub-classes.

- | | |
|---------------|----------------|
| 1. Drying. | 5. Pressing. |
| 2. Finishing. | 6. Shearing. |
| 3. Folding. | 7. Sponging. |
| 4. Napping. | 8. Stretching. |

CLASS 96.—COATING WITH METAL. (III.)

Sub-classes.

- | | |
|------------------------|--------------------|
| 1. Electro-deposition. | 5. Nickel-plating. |
| 2. Galvanizing. | 4. Precipitating. |
| 9. Iron oxides. | 7. Tinning. |

Sub-Classes in Coating with Metal, with Explanatory Notes.

1. ELECTRO-DEPOSITION. Processes of and apparatus for coating with metals (other than nickel) by electro-deposition.
2. GALVANIZING. Processes of and apparatus for coating metals with molten zinc, copper, &c.
9. IRON OXIDES. Processes of and apparatus for oxidizing iron surfaces.
5. NICKEL-PLATING. Processes of and apparatus for electroplating with nickel.
8. PRECIPITATING. Processes of and apparatus for coating with metal by chemical processes, (not included in other sub-classes,) including production of coating of sulphides, &c.
7. TINNING. Processes of and apparatus for coating metals with molten tin, terne, lead, &c.

CLASS 151.—COMPOSITE ROOFING. (XV.)

Sub-classes.

- | | |
|---------------|----------|
| 1. Apparatus. | 3. Felt. |
| 2. Composite. | |

CLASS 147.—COOPERING. (XXIX.)

Sub-classes.

- | | |
|----------------------------|----------------------|
| 1. Barrel-head making. | 12. Crozing barrels. |
| 2. Barrel-hoop machines. | 6. Crozing staves. |
| 3. Barrel-making machines. | 13. Hoop-drivers. |
| 4. Basket-making machines. | 8. Jointing staves. |
| 5. Box-machines. | 10. Wooden articles. |
| 11. Coiling. | |

Sub-Classes in Coopering, with Explanatory Notes.

1. BARREL-HEAD MAKING. The wood is held in a clamp and cut to disk form, usually with beveled edges, by a saw or cutter. The clamp revolves or cutter moves around it.
2. BARREL-HOOP MACHINES. For dressing or cutting wooden hoops by saws, or by rotary or reciprocating cutters, including mechanism for forming the taper or bevel of hoops.

3. BARREL-MAKING MACHINES. For assembling the barrel.
4. BASKET-MAKING MACHINES. For building up splints about a former.
5. BOX-MACHINES. For making pill-boxes, &c., by forming the box upon the stock by means of cutters, and then severing the box from the block.
11. COILING. Coiling hoops or veneers, usually about a collapsible former.
12. CROZING BARRELS. Machines for cutting the croze after the barrel is set up.
6. CROZING STAVES. Machines for cutting the croze in staves or blanks.
13. HOOP-DRIVERS. Machines for trussing and evening barrels.
8. JOINTING STAVES. Machines for producing the bevel on bulged staves.
10. WOODEN ARTICLES. Miscellaneous small articles of wood.

CLASS 28.—CORDAGE. (XXI.)

Sub-classes.

- | | |
|-------------------------------|---------------------------------------|
| 1. Balling. | 12. Spools. |
| 2. Bauding. | 13. Tassels. |
| 3. Bobbin-supporters. | 14. Warping. |
| 4. Braiding. | Winding bobbins— |
| 5. Cords and ropes. | 15. Warp-wind, |
| 21. Cord and rope machines. | 16. Weft-wind, |
| 6. Covering cord. | 17. Sewing-machine shuttle. |
| 7. Finishing yarn and thread. | 22. Winding-heddle and seine-needles. |
| 8. Fuse. | 18. Winding-spools. |
| 9. Packaging braid and yarn. | 19. Winding tating-shuttles. |
| 10. Reels. | 20. Yarn guides and clearers. |
| 11. Separating rope. | |

CLASS 29.—CRINOLINE AND CORSETS. (XXIV.)

Sub-classes.

- | | |
|----------------------|--------------------|
| 1. Bustles. | 6. Pads. |
| 3. Corsets. | 7. Skirt-machines. |
| 4. Hoops and clasps. | 9. Stays. |
| 5. Hoop-skirts. | 8. Underwaists. |

CLASS 156.—CURTAINS, SHADES, AND SCREENS. (VIII.)

Sub-classes.

- | | |
|----------------------------------|----------------------|
| 1. Carriage-curtain fastenings. | 7. Inside blinds. |
| 2. Curtain-cord holders. | 8. Ratchet and pawl. |
| 11. Curtain-cord tighteners. | 9. Spring-rollers. |
| 3. Curtain-fixtures. | 13. Window-cornices. |
| 4. Curtain-rollers and brackets. | 14. Window-screens. |
| 5. Curtain-tassels. | 10. Window-shades. |
| 6. Friction-rollers. | |

CLASS 30.—CUTLERY. (XX.)

Sub-classes.

- | | |
|-----------------------------|--------------------------|
| 1. Animal-shears. | Knives— |
| 2. Button-hole cutters. | 8. Hay. |
| 3. Can-openers. | 10. Pocket. |
| 16. Envelope-openers. | 11. Pruning implements. |
| 21. Fork-guards. | 12. Razors. |
| 5. Forks. | 13. Scissors and shears. |
| 22. Forks and spoons. Solid | 14. Twine-cutters. |
| 9. Knives— | 15. Wick-trimmers. |
| 20. Gage, | 17. Wire-shears. |

CLASS 31.—DAIRY. (II.)

Sub-classes.

- | | |
|------------------------------------|-----------------------------|
| Butter and cheese— | Churns— |
| 24. Cutters, | Rotary— |
| 23. Manufacture of | 42. Vertical single-dasher. |
| 25. Butter workers and molds. | Vertical double-dasher— |
| 20. Centrifugal creamers. | 43. Concentric shafts, |
| 21. Cheese-hoops. | 41. Parallel shafts. |
| 26. Cheese-turners. | 17. Vibrating, |
| 22. Cheese-vats and curd-breakers. | 18. Working body. |
| 7. Churns— | 8. Cow-milkers. |
| 9. Double-acting, | 27. Cream-pumps. |
| Reciprocating, | 63. Drink-mixers. |
| Crank mechanism— | 57. Egg-beaters— |
| 29. Multiple-dasher, | 61. Reciprocating, |
| 30. Single-dasher, | 59. Rotary multiple-dasher, |
| 31. Combined lever and | 58. Single-dasher. |
| crank mechanism, | 60. Vibrating. |
| 32. Foot mechanism, | Milk-coolers— |
| 33. Hand and foot mechanism. | 45. Aerating. |
| Lever mechanism— | 46. Creaming-cans— |
| 34. Multiple-dasher, | 47. Agitators, |
| 35. Single-dasher, | 48. Depending-tube, |
| 36. Rocking-seat mechanism. | 49. Floats, |
| 37. Without operating mechanism. | 50. Vacuum creamers, |
| Rotary— | 51. Vertical-tube. |
| 38. Diagonal-dasher, | 52. Milk-circulation. |
| 39. Horizontal single-dasher, | 53. Vats— |
| Horizontal double-dasher— | 54. Air-circulation, |
| 40. Concentric shafts, | 55. Horizontal-tube, |
| 41. Parallel shafts. | 56. Removable-pipe. |
| | 13. Milk-stools. |
| | 14. Pails and strainers. |
| | 23. Tables and racks. |

CLASS 32.—DENTISTRY. (XX.)

Sub-classes.

- | | |
|---------------------|---------------|
| 1. Articulators. | 6. Molds. |
| 2. Drills. | 7. Operative. |
| 3. Foil-condensers. | 8. Pluggers. |
| 4. Mechanical. | 9. Teeth. |
| 5. Miscellaneous. | 10. Tools. |

CLASS 165.—DESIGNS. (XXIV.)

The sub-classes conform as nearly as possible to those of the mechanical classes.

CLASS 124.—DISTILLATION. (III.)

Sub-classes.

- | | |
|-------------------|----------------------|
| 1. Aging liquors. | 9. Paraffine. |
| 2. Alcohol. | 10. Preparing grain. |
| 3. Burning-fluid. | 11. Refining oils. |
| 4. Condensers. | 13. Revenue-guards. |
| 7. Fresh water. | 12. Turpentine. |
| 8. Oil. | |

Sub-Classes in Distillation, with Explanatory Notes.

1. AGING LIQUORS.—Processes of and apparatus for purifying and aging liquors by chemical agents, electricity, &c.
2. ALCOHOL. Processes of and apparatus for obtaining alcohols by distillation.
3. BURNING-FLUID. Liquids to be employed for burning in lamps, and processes of preparing the same, not involving distillation or the refining processes.
4. CONDENSERS. Processes of and apparatus for condensing vapors arising from liquids undergoing distillation.
7. FRESH WATER. Processes of and apparatus for distilling water for domestic purposes. (See Class 121, Condensers, Division XVIII.)
8. OIL. Processes of and apparatus for the distillation of mineral oils.
9. PARAFFINE. Processes of and apparatus for the preparation and purification of paraffine, ozokerite, &c.
10. PREPARING GRAIN. Processes of and apparatus for reducing grain to a moist disintegrated mass for immediate use in the wash-tub. Does not include articles primarily suitable for food, nor preparing the same, Class 99, Preserving, Division VI; nor cleaning and degerminating grain, Class 83, Mills, Division XXV.
11. REFINING OILS. Refining mineral oils.
13. REVENUE-GUARDS. Devices for testing liquor, especially adapted for use during the distillation process.
12. TURPENTINE. Preparation and refining of turpentine and rosin.

CLASS 33.—DRAFTING. (XXIII.)

Sub-classes.

- | | |
|---------------------------|---------------------|
| 13. Beam-compasses. | 7. Parallel-rulers. |
| 1. Calipers and dividers. | 8. Plotters. |
| 2. Curve-scribers. | 12. Protractors— |
| 5. Ellipseographs. | 9. Scribes, |
| 6. Pantographs. | 10. Stair-curvers. |

CLASS 34.—DRIERS. (XXVIII.)

Sub-classes.

- | | |
|----------------------|------------------------|
| 13. Coffee-roasters. | Driers— |
| 1. Driers— | 8. Paper, |
| 3. Fruit, | 10. Tobacco, |
| 12. Glue, | 11. Wool. |
| 4. Grain, | 2. Feather-renovators, |
| 5. Lumber, | 14. Gravel-beaters. |
| 6. Malt, | 9. Smoke-houses. |
| 7. Meal. | |

CLASS 35.—EDUCATIONAL APPLIANCES. (XXIII.)

Sub-classes.

- | | |
|---------------------|--------------------|
| 1. Alphabet-blocks. | 6. Maps. |
| 2. Arithmetic. | 12. Miscellaneous. |
| 3. Astronomy. | 8. Penmanship. |
| 15. Blackboards. | 9. Reading. |
| 4. Geography. | 10. Slates. |
| 5. Globes. | 14. Slate-mnflers. |
| 13. Kryptography. | |

CLASS 171.—ELECTRICITY. GENERATION. (XXVI.)

Sub-classes.

- | | |
|--------------------------|------------------------------|
| Batteries— | 33. Magneto-electric— |
| 6. Galvanic, | 118. Couplings. |
| 72. Secondary, | 76. Hand-machines. |
| 74. Applications, | 34. Meters. |
| 73. Thermal. | 40. Regulators— |
| 23. Friction-generators. | 119. Alternating. |
| 95. Galvanometers. | 97. Systems of distribution. |
| 27. Induction-coils. | |

Sub-Classes in Electricity—Generation—with Explanatory Notes.

6. BATTERIES. GALVANIC. Chemical generators of electricity.
72. BATTERIES. SECONDARY. Appliances for translating electricity into chemical energy and retranslating the same into electricity.
74. BATTERIES. SECONDARY. APPLICATIONS. Devices and systems which involve the use of secondary batteries.
73. BATTERIES. THERMAL. Appliances for translating heat directly into electricity.
23. FRICTION-GENERATORS. Generators of static electricity.
95. GALVANOMETERS. Devices for indicating the strength, tension, or direction of electric currents.
27. INDUCTION-COILS. Coiled conductors for producing and applying the higher order of currents from varying or intermittent primary currents.
33. MAGNETO-ELECTRIC. Including dynamic generators of electricity for producing currents by magneto-electric induction.
115. MAGNETO-ELECTRIC. COUPLINGS. Including combinations of generators with other generators and driving devices.
76. MAGNETO-ELECTRIC. HAND-MACHINES. Including machines for signaling, blasting and medical purposes.
34. METERS. Devices for measuring and registering the flow of electric currents.
40. REGULATORS. Devices for controlling and governing electric generators and motors.
119. REGULATORS. ALTERNATING. Including devices for regulating alternating generators and motors.
97. SYSTEMS OF DISTRIBUTION. Organized systems for distributing electricity, including apparatus at a central station and circuits controlled therefrom.

CLASS 172.—ELECTRICITY. MOTIVE-POWER. (XXVI.)

Sub-classes.

- | | |
|-------------------------|-----------------------------|
| 9. Car-brakes. | 8. Steering and propulsion. |
| 15. Dental instruments. | 53. Transmission of power. |
| 75. Locomotion. | |
| 36. Motors— | |
| 120. Alternating. | |

Sub-Classes in Electricity—Motive-Power—with Explanatory Notes.

9. CAR-BRAKES. Devices for retarding the movement of vehicles.
15. DENTAL INSTRUMENTS. Includes teeth-extractors, drillers, and pluggers.
75. LOCOMOTION. Machines and devices adapted to the propulsion of vehicles by electricity.
36. MOTORS. Including machines for translating electricity into mechanical power.
120. MOTORS. ALTERNATING. Including electric motors operated by alternating currents.
8. STEERING AND PROPULSION. Devices for controlling and directing torpedo and other boats from a distant point.
53. TRANSMISSION OF POWER. Systems and apparatus for transmitting power to distant points by electricity.

CLASS 173.—ELECTRICITY. CONDUCTORS. (XXVI.)

Sub-classes.

- | | |
|-------------------|---------------------|
| 13. Conductors— | 25. Insulators. |
| 94. Lead-covered. | 31. Lightning-rods. |
| 70. Underground. | 43. Rheostats. |
| 14. Connectors. | |

Sub-Classes in Electricity—Conductors—with Explanatory Notes.

13. CONDUCTORS. Including cables, wires, and means for making and insulating the same.
94. CONDUCTORS. LEAD-COVERED. Lead-incased conductors, including machines for their manufacture.
70. CONDUCTORS. UNDERGROUND. Conduits and conductors for subterranean lines.
14. CONNECTORS. Including binding-posts, line-connectors, &c.
25. INSULATORS. Insulating bearing-points for line-wires.
31. LIGHTNING-RODS. Devices for protecting structures from lightning.
43. RHEOSTATS. Devices for producing artificial resistance.

CLASS 174.—ELECTRICITY. MEDICAL AND SURGICAL. (XXVI.)

Sub-classes.

- | | |
|----------------|-----------------|
| 87. Baths. | 89. Electrodes. |
| 88. Body-wear. | |

Sub-Classes in Electricity—Medical and Surgical—with Explanatory Notes.

87. BATHS. Applications of electricity to baths and bath-furniture for curative purposes.
88. BODY-WEAR. Galvanic devices to be applied to the body for curative purposes.
89. ELECTRODES. Circuit terminals for applying electricity to the body.

CLASS 175.—ELECTRICITY. SPECIAL APPLICATIONS.

(XXVI.)

Sub-classes.

- | | |
|---------------------------|-------------------------------|
| Applications— | Igniting devices— |
| 4. General. | 117. Inductional. |
| 5. Tools and machines. | 116. Manual. |
| 21. Electro-magnets— | 91. Portable. |
| 96. Machines for winding. | 25. Incrustation. |
| 16. Heaters. | 93. Magnetic locks and bolts. |
| Igniting devices— | 90. Separators. |
| 115. Automatic | 54. Valve-controllers. |

Sub-Classes in Electricity—Special Applications—with Explanatory Notes.

4. APPLICATIONS. GENERAL. Includes applications of electricity not otherwise classified.
5. APPLICATIONS. TOOLS AND MACHINES. Includes application of electricity to machinery and mechanical implements.
21. ELECTRO-MAGNETS. Special constructions and arrangements of electro-magnets and their armatures.
96. ELECTRO-MAGNETS. MACHINES FOR WINDING. Machines for winding insulated wire for electro-magnets and armatures.
16. HEATERS. Devices for heating or warming by the use of the electric current.
115. IGNITING DEVICES. AUTOMATIC. Including devices for opening the cock and producing the spark by automatic means.
117. IGNITING DEVICES. INDUCTIONAL. Including inductional devices for producing the spark.
116. IGNITING DEVICES. MANUAL. Including devices for opening the cock and producing the spark by hand.
91. IGNITING DEVICES. PERMANENT. Embracing detached devices for lighting gas and lamps adapted to be carried from place to place.
25. INCRUSTATION. Means for preventing injurious deposition in steam-boilers.
93. MAGNETIC LOCKS AND BOLTS. Application of electricity and magnetism to locks and bolts.
90. SEPARATORS. Electric and magnetic separators of heterogeneous matter.
54. VALVE-CONTROLLERS. Electrical devices for regulating and controlling valve movements.

CLASS 176.—ELECTRIC LIGHTING. (XVI.)

Sub-classes.

- | | |
|----------------------|----------------------------|
| Cut-outs— | Lights— |
| 80. Electro-magnetic | Arc— |
| 79. Mechanical. | 109. Gear-clutch. |
| 78. Thermal. | 110. Arc and incandescent— |
| Lights— | 111. Non-feeding. |
| Arc— | 112. Special features. |
| 104. Gravity-feed. | 102. Filaments and carbon. |
| 105. Clutch. | 15. Incandescent. |
| 106. Gear-clutch. | 113. Special features. |
| 107. Positive-feed. | 95. Sockets and keys. |
| 108. Clutch. | 19. Systems. |

CLASS 177.—ELECTRIC SIGNALING. (XVI.)

Sub-classes.

- | | |
|------------------|----------------------|
| 1. Alarms— | 26. Indicators. |
| 2. Burglar. | 32. Railway-signals. |
| 3. Annunciators. | 39. Recorders. |
| 7. Bells. | |

CLASS 157.—ELEVATORS. (XII.)

Sub-classes.

- | | |
|------------------|--------------------|
| 2. Controllers. | 6. Indicators. |
| 3. Dumb-waiters. | 7. Lazy-tongs. |
| 1. Elevators. | 8. Safety devices. |
| 4. Hatchways. | 9. Screws. |
| 5. Rod. | |

CLASS 37.—EXCAVATING. (IV.)

Sub-classes.

- | | |
|------------------|------------------------|
| 11. Diggers. | Excavators— |
| 1. Dredgers— | 9. Hydraulic. |
| 13. Anchoring. | 10. Rammers. |
| 14. Clam-shells. | 17. Wheel. |
| 13. Scouring. | 5. Scrapers— |
| 2. Earth-angers. | 7. Wheeled. |
| Excavators— | 6. Self-loading carts. |
| 15. Carrier. | 8. Warming lands. |
| 16. Dipper. | |

CLASS 52.—EXPLOSIVES. (VI.)

Sub-classes.

- | | |
|------------------------|---------------------|
| 1. Blasting compounds. | 5. Matches. |
| 2. Fulminates. | 3. Nitro compounds. |
| 4. Gunpowder. | |

CLASS 168.—FARRIERY. (XXVIII.)

Sub-classes.

- | | |
|--------------------------------|-------------------------|
| 1. Calk-sharpeners. | 6. Shoes. |
| 2. Hoof and shoe spreaders. | 7. Shoe-nail clinchers. |
| 3. Hoof cleaners and trimmers. | 8. Shoeing-stands. |
| 5. Hoof-pads. | 9. Toe-weights. |

CLASS 38.—FELTING AND HAT-MAKING. (NV.)

Sub-classes.

- | | |
|-----------------------------|---------------------|
| 1. Blocks. | 10. Forming-bats. |
| 2. Blocking and stretching. | 11. Fulling. |
| 4. Brushing and finishing. | 12. Furs and pelts. |
| 6. Curling brims. | 14. Ironing. |
| 7. Fabrics. | 15. Pouncing. |
| 8. Felting-machines. | 16. Pressing. |
| 9. Flock-cutting. | |

CLASS 39.—FENCES. (I.)

Sub-classes.

- | | |
|-----------------------------|-----------------------------|
| 2. Fence-posts. | Gates— |
| 3. Fences— | Swinging— |
| 1. Barbed, | 14. Hand-openers, |
| 4. Flood, | 20. Load-openers, |
| 6. Iron, | 17. Rotary, |
| 9. Wire, | 16. Self-closers, |
| 5. Gates— | 25. Tilting, |
| 15. Compound, | 19. Vertically-adjustable, |
| 21. Expanding, | 13. Tilting— |
| 24. Dropping, | 26. Folding-panel. |
| 22. Jump, | 12. Wire fasteners. |
| 23. Oscillating, | 45. Wire-stretchers. Perma- |
| 11. Railway— | ment— |
| 42. Cattle-guard, | 46. Compensators, |
| 38. Electric, | 47. Mid-wire take-up, |
| 36. Mast— | 48. Path-closers, |
| 35. Automatic, | 49. Post-winders, |
| 41. Platform-guard, | 50. Vertical. |
| 37. Pneumatic, | 51. Wire-stretchers. Remov- |
| 39. Rocking, | able— |
| 44. Sliding, | 52. Clutch-bars, |
| 43. Swinging, | 53. Grips, |
| 40. Vertically-moving, | 54. Levers— |
| 7. Sliding— | 55. Attached, |
| 29. Lever-openers, | 56. Loopers, |
| 28. Pulley or rack openers, | 57. Rack-bars, |
| 30. Suspended, | 58. Ratchet-bars, |
| 31. Vibrating tracks, | 59. Reel-carriers, |
| 32. Sliding and swinging— | 60. Tongs, |
| 33. Hinged-roller, | 61. Twin-hooks, |
| 34. Suspending frames, | 62. Windlasses. |
| 8. Swinging— | |
| 18. Folding-panel, | |

CLASS 41.—FINE ARTS. (V.)

Sub-classes.

- | | |
|------------------|---------------------------|
| 1. Apparatus. | 7. Phosphates. |
| 9. Compositions. | 8. Sewage and night-soil. |
| 6. Organic. | |

CLASS 42.—FIRE-ARMS. (XXII.)

Sub-classes.

- | | |
|-------------------------|--------------------------|
| 1. Artists' appliances. | 10. Gilding. Leaf. |
| 2. Artificial flowers. | 12. Medals. |
| 19. Badges. | 21. Metal ornamentation. |
| 3. Banners and flags. | 13. Ornamenting cloth. |
| 4. Canvas-stretchers. | 14. Picture-frames. |
| 5. Decorative painting. | 20. Picture-supports. |
| 6. Drawing-boards. | 15. Pictures. |
| 7. Easels. | 16. Sculpture. |
| 8. Engraving-machines. | 17. Theater appliances. |
| 9. Engraving and tools. | 18. Transfers. |

CLASS 43.—FISHING AND TRAPPING. (XXII.)

Sub-classes.

- | | |
|----------------------------|-------------------------|
| 25. Ball traps. | 11. Implements. |
| 3. Bayonets. | 12. Locks— |
| 5. Bows and cross bows. | 28. Recoil-operated. |
| 6. Breech-loaders. | 27. Muzzle-loaders. |
| 8. Catapults. | 15. Nipples and guards. |
| 26. Electrical appliances. | 16. Pistol-swords. |
| Guns— | 18. Revolvers. |
| 1. Air and spring, | 19. Rifling. |
| 4. Blow, | 20. Sights. |
| 7. Cane, | 21. Stocks. |
| 13. Magazine. | 22. Targets— |
| 9. Gun-barrels. | 24. Flying. |
| 10. Gun-trimmings. | 23. Toy pistols. |

CLASS 44.—FUEL. (VI.)

Sub-classes.

- | | |
|----------------|----------------|
| 4. Car-heater. | 2. Portable. |
| 1. Chemical. | 3. Stationary. |

CLASS 45.—FURNITURE. (VIII.)

Sub-classes.

- | | |
|-------------------------|--------------------|
| 10. Bed-bottom. | Ladders— |
| 11. Blanket. | Escape-ladders— |
| 1. Chutes. | 18. Trolley, |
| 4. Friction. | 3. Flexible, |
| 5. Hoists— | 7. Step. |
| 9. Trolley. | 20. Ladder-trucks. |
| 8. Ladders— | 6. Lazy-tongs. |
| Escape-ladders— | 14. Sliding poles. |
| 15. Fixed, | Towers— |
| 16. Mounting, | 13. Fixed, |
| 17. Sectional band, | 12. Shooting. |
| 19. Sheeting and truck, | |

CLASS 46.—GAMES AND TOYS. (VIII.)

Sub-classes.

- | | |
|---------------------------------|--------------------------------|
| 1. Ceilings, floors, and parti- | 5. Flooding. |
| tious. Non-metallic. | 6. Floor-arches. |
| 2. Columns and timber. | 7. Metallic sidings and parti- |
| 3. Cornices. | tions. |
| 4. Fire-proof roofs. | |

CLASS 47.—FLUID-PRESSURE RAILWAY BRAKES. (XVIII.)

Sub-classes.

- | | |
|-----------------------------|----------------------------|
| 2. Decoys. | Insect-destroyers— |
| Fishing— | 5. Fumigators, |
| 3. Fishways, | 8. Moth-exterminators, |
| 4. Floats, | 14. Powder-dusters. |
| 6. Harpoons and spears, | Traps— |
| 7. Hooks, | 18. Bed-bug, |
| 9. Nets and seines, | 19. Cage, |
| 10. Oyster-culture, | 20. Fish, |
| 11. Oyster-dredges, | 21. Impalement, |
| 12. Oyster rakes and tongs, | 22. Insect, |
| 13. Pisciculture, | 23. Jaw, |
| 15. Reels, | 24. Self-set and ever-set, |
| 16. Rods, | 25. Sporting, |
| 17. Sinkers. | 26. Victim-set, |
| Insect-destroyers— | 27. Wire-choker. |
| 1. Catchers, | |

CLASS 48.—FLUID-PRESSURE REGULATORS. (XVIII.)

Sub-classes.

- | | |
|----------------|-------------------|
| 1. Automatic. | 4. Electric. |
| 2. Derailment. | 5. Momentum-pump. |
| 3. Direct. | 6. Vacuum. |

CLASS 49.—FIRE-EXTINGUISHERS. (IX.)

Sub-classes.

- | | |
|-----------|-----------|
| 1. Gas. | 3. Water. |
| 2. Steam. | |

CLASS 50.—FIRE-PROOF BUILDINGS. (IV.)

Sub-classes.

- | | |
|-------------------|--------------------|
| 1. Artificial. | 3. Peat-machines. |
| 2. Fire-kindlers. | 4. Purifying coal. |

CLASS 51.—FIRE-EXTINGUISHERS. (IX.)

Sub-classes.

- | | |
|----------------------------------|-----------------------------|
| 1. Book-cases. | 12. Pads and feet. |
| 2. Book-shelves. | 23. Picture-hangers. |
| 3. Book-supports. | 24. Quilting-frames. |
| 4. Brackets. | 25. School seats and desks. |
| 5. Bureaus. | 28. Soap-holders. |
| 43. Carpet stretchers and tack- | 41. Spittoons. |
| ers. | 42. Spittoon-lifters. |
| 45. Closets. | 30. Table-leaf supports. |
| 6. Desks. | 31. Tables— |
| 7. Drawers. | 8. Drawing, |
| 10. Fire-screens. | 9. Extension, |
| 44. Furniture-covers. | 11. Folding, |
| 13. Hat and coat racks. | 17. Kitchen, |
| 14. Hat-holders. | 26. Self-waiting, |
| 15. Insect-guards. | 27. Sewing-machine. |
| 16. Kitchen-cabinets. | 32. Towel racks and stands. |
| 18. Mirrors— | 33. Umbrella-stands. |
| 39. Window. | 34. Upholstering. |
| 19. Music stands and portfolios. | 35. Wall-pockets. |
| 20. Nursery-gates. | 36. Wall-protectors. |
| 21. Oil-can holders. | 37. Wardrobes. |
| 22. Packing furniture. | 38. Wash-stands. |

CLASS 52.—FIRE-EXTINGUISHERS. (IX.)

Sub-classes.

- | | |
|----------------------------|--------------------------|
| 4. Balls and bats. | 24. Masks. |
| 43. Base-balls. | 25. Playing-cards. |
| 6. Billiard appliances— | 41. Puzzles and magic. |
| 7. Balls, | 27. Roundabouts. |
| 8. Chalk-cups, | 30. Skipping-ropes. |
| 9. Cues, | 31. Soap-bubble pipes. |
| 10. Cue-tip fasteners, | 32. Spinning-tops. |
| 11. Cushions, | 33. Stilts. |
| 12. Tables, | 34. Swings. |
| 13. Table-levelers. | 35. Toy building-blocks. |
| 14. Buzzes and whirligigs. | 36. Toy money-boxes. |
| 15. Croquet. | 37. Toys— |
| 16. Dice-boxes. | 40. Figure— |
| 20. Game apparatus— | 45. Wheeled, |
| 44. Projectile. | 46. Sounding— |
| 22. Hobby-horses. | 47. Wheeled, |
| 23. Kites. | 48. Wheeled. |
| 42. Lawn-tennis. | 38. Trundles and hoops. |

CLASS 43.—GAS. (III.)

Sub-classes.

- | | |
|-------------------------------------|---------------------------|
| 1. Anti-combustion. | Gas— |
| 2. Carburetors— | 6. Coal and oil. |
| 24. Carbureting-lamps, | 7. Coal and water. |
| 29. Float-vaporizers. | 8. Coal, oil, and water. |
| 25. Gas and air mixers, | 12. Hydrogen, |
| 3. Jet-mixers, | 13. Oil, |
| 26. Oil-feed, Float-valves | 14. Oil and water. |
| 27. Oil-feed, Rotary, | 19. Water, |
| 28. Revolving. | 20. Wood. |
| 4. Center-seals and by-pass valves. | 11. Holders. |
| 9. Dip-pipes | 15. Purifiers. |
| 22. Distribution. | 13. Retort-chargers. |
| 10. Exhausters. | 23. Retort gas-furnaces. |
| Gas— | 16. Retort-lids. |
| 5. Coal, | 17. Retorts and settings. |

Sub-Classes in Gas, with Explanatory Notes.

1. **ANTI-COMBUSTION.** Processes of and apparatus for deoxygenating air and generating gases to be used in extinguishing fires. Does not include Class 169, Fire-Engines, Division IX, Class 23; Fire-Extinguishing Compounds, Division VI.
2. **CARBURETORS.** Methods of and apparatus for carbureting air and gas for illuminating and heating purposes, including means for regulating the flow of air or gas before entering and upon leaving the carburetor, and of mixing the carbureted air or gas with air, and of regulating the flow of oil to the carburetor, and for heating the latter, and for heating the air or gas to be carbureted.
24. **CARBURETORS, CARBURETING-LAMPS.** Devices for carbureting air or gas attached to individual lamps, burners, and chandeliers. Does not include Class 67, Lamps and Gas Fittings, Division XXX.
29. **CARBURETORS, FLOAT-VAPORIZERS.** Carburetors in which the air or gas to be carbureted is made to pass through or under a float resting on the carbureting-liquid.
25. **CARBURETORS, GAS AND AIR MIXERS.** Carburetors provided with means for mixing carbureted air or gas with pure air.
3. **CARBURETORS, JET-MIXERS.** Carburetors provided with means for introducing air or hydrocarbon vapor on the injector principle. Does not include injector-burners, Class 75, Division III; injectors and ejectors, Class 162, Division XVIII.
26. **CARBURETORS, OIL-FEED, FLOAT-VALVES.** Carburetors in which the supply of hydrocarbon oil is regulated by a float attached to the valve.
27. **CARBURETORS, OIL-FEED, ROTARY.** Carburetors with means whereby hydrocarbon oil is elevated by buckets moving on an endless chain.
28. **CARBURETORS, REVOLVING.** The evaporating-surfaces revolve in the carbureting-liquid.
4. **CENTER-SEALS AND BY-PASS VALVES.** Construction and operation of same in connection with gas works and mains.
9. **DIP-PIPES.** Modes of connecting the dip-pipes with the hydraulic main, means for sealing the dip and for carrying off the tar deposited in the main.
22. **DISTRIBUTION.** Systems of conveying and distributing gas, gas-conduits, automatic cut-offs, mains for conveying gas under pressure, means for detecting and collecting leakage from gas-mains, pipe-joints for gas-mains. (See Pipe Couplings and Mains and Pipes, Class 137, Division IX, and Gas-Pressure Regulators, Class 50, Division XVIII.)
10. **EXHAUSTERS.** Apparatus for exhausting in connection with gas-retorts. (See Steam-Engines, Exhaust Mechanism, Class 121, Division XVIII.)
5. **GAS, COAL.** Processes of and apparatus for manufacturing gas for heating and illuminating purposes by the destructive distillation of coal in retorts, horizontal or vertical, singly or in series, and the necessary appliances for operating the same; and in connection the purifiers, condensers, &c.
6. **GAS, COAL AND OIL.** Processes of and apparatus for manufacturing gas for heating and illuminating purposes by mixing the gas produced from distillation of coal with vapors of hydrocarbon oil; and devices for introducing the latter.
8. **GAS, COAL AND WATER.** Processes of and apparatus for manufacturing gas by mixing the gas produced by distillation of coal with water or water vapor; and special means for introducing the latter.
7. **GAS, COAL, OIL, AND WATER.** Processes of and apparatus for manufacturing heating and illuminating gas by mixing gas produced from distillation of coal, vapors of hydrocarbon oils, and gases from decomposition of steam; with devices for introducing the various elements in connection with superheaters, fixing-chambers, purifiers, &c.
12. **GAS, HYDROGEN.** Processes of and apparatus for manufacturing hydrogen gas by decomposing steam by passing it through incandescent fuel, by bringing water in contact with acids and zinc or other decomposing substances, by action of dilute acid on zinc or iron filings, &c.; with necessary means for carbureting and fixing the gas.

13. **GAS, OIL.** Processes of and apparatus for manufacturing gas from hydrocarbon oils by vaporizing the same in a heated retort, or in contact with a bath of molten metal, or in a tubular generator to contain oil which is vaporized by means of superheated steam in the tubes, &c.; and means for regulating the temperature in the retorts and the feed of the hydrocarbon.
14. **GAS, OIL AND WATER.** Processes of and apparatus for manufacture of heating and illuminating gas by decomposing steam, vaporizing hydrocarbon oil, and mixing the two to form a fixed gas; with the necessary appliances for operating the apparatus.
19. **GAS, WATER.** Processes of and apparatus for production of gas from decomposition of steam by passing same through highly-heated carbonaceous fuel; in connection with means for carbureting and fixing the gas.
20. **GAS, WOOD.** Processes of and apparatus for production of gas from distillation of wood or other substances, in connection with suitable devices for introducing hydrocarbon oil or vapors, and of fixing the gas.
11. **HOLDERS.** Receptacles for holding gas under pressure, means for sealing the holder; and, in connection with the necessary operation of the holder, brackets, rollers, guides, pulleys, and weights.
15. **PURIFIERS.** Methods of and apparatus for the washing or scrubbing of gas by passing through water, lime, and various other substances for removal of deleterious matter.
13. **RETORT-CHARGERS.** Apparatus for charging and drawing gas-retorts by means of scoops, wheeled carriages, &c., or brackets hung transversely on lateral bars; and means for leveling the charge in the retort.
23. **RETORT GAS-FURNACES.** Special construction of furnaces for manufacturing heating and illuminating gas, and necessary appliances for operating the same, with special construction of flues for introduction of air, and means for burning the gases within the furnace. (See Iron and Steel Direct Retort-Furnaces, Class 75, Metallurgy, Division III.)
16. **RETORT-LIDS.** Caps or lids, as especially applied to the closing of gas-retorts.
17. **RETORTS AND SETTINGS.** Apparatus for generating various forms of gas, means for operating the same without special provision for flues, or for burning generated gases. (See Gas Retort Gas-Furnaces.)

CLASS 49.—GLASS. (XV.)

Sub-classes.

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|---------------|-----------------------|
| 1. Articles. | 8. Ornamentation. |
| 2. Cutters. | 10. Plate and window. |
| 3. Enameling. | 9. Presses. |
| 7. Molds. | 11. Tools. |

CLASS 51.—GRINDING AND POLISHING. (XXVII.)

Sub-classes.

- | | |
|----------------------------------|--------------------------------|
| 1. Abrading materials and Metal— | 9. Needle-eyes, |
| tools. | 10. Needles, rods, and points, |
| Glass and stone— | 12. Plane surfaces, |
| 3. Curved surfaces, | 14. Rumbles, |
| 11. Plane surfaces. | 15. Sheet metal and wire, |
| Metal— | 16. Stropps, hones, and rides. |
| 2. Card-grinding, | Wood— |
| 4. Curved surfaces, | 5. Curved surfaces, |
| 6. Cutlery-scooters, | 13. Plane surfaces. |
| 7. Edge-tools, | |
| 8. Mower and reaper knives, | |

CLASS 53.—HARDWARE-MAKING. (XIII.)

Sub-classes.

- | | |
|-----------------------------------|---------------------------------|
| 1. Bridge-irons. | 9. Miscellaneous. |
| 2. Builders' hardware. | 20. Musical-instrument work. |
| 3. Cutlery. | 12. Pens, pencils, and holders. |
| 4. Eyebolts and hooks. | 21. Printing appliances. |
| 5. Fence-barbs of sheet metal. | 13. Spinners and weavers. |
| 6. Ferrules, rings, and thumbles. | 15. Spoons, Manufacture of |
| 8. Gas and water fittings. | 16. Springs. |
| 10. Hinges. | 22. Stamping. |
| 23. Lamp-work. | 17. Sucker-rod joints. |
| 11. Leather-workers' hardware. | 19. Tie-bands. |
| | 18. Umbrella-irons. |

CLASS 54.—HARNESS. (XI.)

Sub-classes.

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|-------------------------|-------------------------|
| 1. Bonnets and covers. | Harness— |
| 2. Bridle-bits. | 13. Tools. |
| 3. Bridles and halters. | 16. Horse-boots. |
| 4. Collar-fasteners. | 17. Horse-collars. |
| 5. Collar-machines. | 34. Neck-yokes. |
| 6. Fly-nets. | 31. Ox-yokes. |
| 7. Hame-fasteners. | 32. Rein-holders. |
| 25. Hame-tugs. | 21. Riding-saddles. |
| 9. Hames. | 22. Spurs and stirrups. |
| 10. Harness— | 24. Trace-carriers. |
| 29. Attachments. | 23. Trimmings. |
| 11. Machines, | 26. Tugs. |
| 30. Pads. | 27. Whips. |
| 12. Saddles. | 33. Whip-sockets. |

CLASS 55.—HARROWS AND DIGGERS. (I.)

Sub-classes.

- | | |
|-------------------|--------------------------|
| 1. Clod-crushers. | 7. Pivoted teeth. |
| 2. Forks. | 8. Pivoted tooth-bars. |
| 3. Harrows— | 9. Potato-diggers. |
| 11. Revolving, | 10. Rakes. |
| 13. Rotary, | 12. Rollers and harrows. |
| 19. Wheel— | 14. Shovels. |
| 20. Rotary. | 15. Stalk-choppers. |
| 4. Harrow-teeth. | 16. Stalk-pullers. |
| 5. Hoes. | 17. Stone-gatherers. |
| 6. Land-rollers. | 18. Transplanters. |

CLASS 56.—HARVESTERS. (VII.)

Sub-classes.

- | | |
|-------------------------------|----------------------------------|
| 1. Bean-harvesters. | Horse-rakes— |
| Binders— | 67. Hand-dumpers, |
| 35. Compressors, | 68. Hay-cockers, |
| 36. Grain-adjusters, | 69. Rake-teeth. |
| 37. Sheaf-carriers, | 19. Lawn-mowers. |
| 2. Clover-harvesters. | 20. Manure-forks. |
| 3. Combined rakes and ted- | 33. Miscellaneous. |
| ders. | Mowers— |
| Corn-harvesters— | 70. Anomalies, |
| 38. Binders and droppers, | 72. Center-cut, |
| 39. Cutters, | 73. Front-cut, One-wheel, |
| 40. Implements, | 74. Front-cut, Two-wheels, |
| 41. Strippers and huskers. | 76. Rear-cut, One-wheel, |
| 5. Corn-shockers. | 77. Rear-cut, Two-wheels, |
| 6. Cotton-harvesters. | 75. Reciprocating-gear, |
| Cutting apparatus— | 78. Thrust-cut. |
| 42. Endless, | 32. Platform adjustments. |
| 43. Guard-fingers and finger- | 22. Reels. |
| bars, | Revolving rakes— |
| 44. Reciprocating, | 80. Flop-over, |
| 45. Rotary, | 81. Wheel. |
| 46. Vibrating. | 27. Scythes and cradles. |
| Droppers— | 24. Seats. |
| 47. Direct-tilting, | Self-binders— |
| 49. Miscellaneous, | 82. Clips and prepared bands, |
| 48. Opening and closing, | 83. Cord-knotiers, |
| 50. Side-delivery, | 84. General structure, |
| 51. Swinging and tilting. | 85. Gleaners and binders, |
| 99. Fruit-gatherers. | 86. Tension and take-up de- |
| 9. Gearing, | vices, |
| 10. Grain-bands. | 87. Twisters and tuckers, |
| 31. Grain wheels and casters. | 88. Wire-twisters. |
| Hand-binders— | Self-rakes— |
| 52. Attachments, | 89. Endless-carriers, |
| 53. Elevated delivery, Rear, | 90. Gaveling-tongs, |
| 54. Elevated delivery, Side, | 91. Platform-movement, |
| 55. Flat delivery, | 92. Reciprocating horizontal |
| 56. Manual traction. | curvilinear, |
| 12. Hand-rakes. | 93. Reciprocating horizontal |
| 13. Hay-caps. | rectilinear, |
| Hay-loaders— | 96. Rotary horizontal axis, |
| 61. Endless-belts, | 94. Rotary vertical axis, |
| 62. Intermittent, | switch, |
| 63. Lifting-reels, | 95. Rotary vertical axis, no |
| 64. Walking-rakes. | switch, |
| 101. Hay-racks. | 98. Traveling horizontal ir- |
| 100. Headers. | regular path, |
| 16. Hedge-trimmers. | 97. Traveling vertical irregu- |
| 17. Hemp and flax harvesters. | lar path. |
| Horse-rakes— | 28. Todders. |
| 65. Draft-dumpers, | 29. Thrashers. |
| 66. Drags, | 30. Track clearers and dividers. |

CLASS 149.—HIDES, SKINS, AND LEATHER. CHEMICAL TREATMENT OF (VI.)

Sub-classes.

- | | |
|----------------------------|------------------------|
| 2. Bating. | 8. Preserving hides. |
| 4. Coloring and polishing. | 9. Tanning materials. |
| 5. Currying. | 10. Tanning processes. |
| 6. Depilating. | 11. Tawing. |

CLASS 57.—HOISTING. (XII.)

Sub-classes.

- | | |
|------------------------------|---------------------------|
| 2. Barrel rollers. | 67. Elevated-carrier— |
| 34. Block and tackle— | 68. Draft-sustaining, |
| 5. Differential pulleys, | 69. Lever-lock, |
| 22. Capstans and windlasses. | 70. Non-lowering support, |
| 3. Car-movers. | 71. Ratchet-lock, |
| 37. Chutes. | 72. Rope-catch, |
| 4. Cranes and derricks— | 73. Sheave-frame catch. |
| 56. Jibless, | 29. Endless belts. |
| 57. Lever-jib, | 8. Grain-conveyers— |
| 58. Non-pivoted jib— | 48. Pneumatic, |
| 59. Rotating— | 49. Screw. |
| 60. Portable, | 9. Grapples. |
| 61. Pivoted jib— | 38. Hay-forks— |
| 62. Rotating— | 39. Corkscrew, |
| 63. Portable, | 40. Grapples. |
| 64. Sliding-jib, | 41. Harpoon, |
| 65. Traveling, double track, | 42. Tilting. |
| 66. Trolley. | 11. Hay-slings. |

CLASS 57—Continued.

- | | |
|----------------------------|------------------------|
| 13. Hoisting-buckets— | Loading and unloading— |
| 74. Belt. | 47. Shoveling devices. |
| 15. Lifting-jacks— | 75. Tilting— |
| 43. Lever, | 76. Hoist, |
| 44. Screw. | 77. Platform. |
| 16. Loading and unloading— | 18. Skids. |
| 52. Hay, | 19. Stump-extractors. |
| 81. Load-binders. | 53. Stackers— |
| 80. Mail-bag catchers, | 54. Endless aprons. |
| 46. Pilers, | 79. Wagon-raisers. |

CLASS 58.—HOROLOGY. (XXIII.)

Sub-classes.

- | | |
|---------------------------|--------------------------|
| 8. Balance-escapements. | 15. Time-alarms. |
| 3. Clocks— | 16. Time-checks. |
| 2. Calendar, | 31. Time lamp-lighters. |
| 28. Electric, | 33. Time-signals. |
| 9. Geographical, | 17. Watches |
| 29. Pneumatic. | 18. Watch-balances. |
| 4. Clock-cases. | 19. Watch-barrels. |
| 5. Clock-striking. | 20. Watch-cases. |
| 6. Clock-winding. | 21. Watch-case springs. |
| 34. Dials and hands. | 22. Watch dust-caps. |
| 10. Metroonomes. | 23. Watch-keys. |
| 11. Pendulums. | 32. Watch-maker's tools. |
| 35. Pendulum-escapements. | 24. Watch-plates. |
| 30. Repeaters. | 25. Watch-regulators. |
| 12. Safety-wheels. | 26. Watch-stops. |
| 13. Stem-winders. | 27. Watch-winding. |
| 14. Sun dials. | |

CLASS 60.—HOSE AND BELTING. (XI.)

Sub-classes.

- | | |
|---------------------|---------------------|
| 1. Belt-fasteners. | 6. Drive-chains. |
| 2. Belt-machines. | 4. Hose and tubing. |
| 7. Belt-stretchers. | 5. Hose-machines. |
| 3. Belting. | |

CLASS 61.—HYDRAULIC ENGINEERING. (IV.)

Sub-classes.

- | | |
|-----------------------|----------------------------|
| 1. Aqueducts. | 8. Docks. |
| 19. Breakwaters. | 9. Drains. |
| 2. Cable-laying. | 26. Forming and preserving |
| 3. Caissons— | channels. |
| 20. Ship. | 29. Jetties. Sectional |
| 4. Canals— | 11. Marine ways. |
| 28. Gate-valves. | 12. Mining. |
| 27. Gates, Bear-trap— | 13. Pile-drivers. |
| 21. Lock. | 18. Piles. |
| 5. Chutes. | 30. Protecting shores. |
| 23. Cribbing. | 15. Tide-powers. |
| 24. Dams and levees. | 16. Tunnels. |
| 22. Dams, Coffers— | 17. Water-gates. |
| 25. Sectional. | 31. Wharves. |
| 7. Diving-armor. | |

CLASS 138.—HYDRAULIC MOTORS. (IX.)

Sub-classes.

- | | |
|-------------------|-------------------------------|
| 11. Chain— | Turbines— |
| 8. Elevators, | 4. Bottom supply, |
| 9. Jacks, | 5. Side ring supply, |
| 10. Presses. | 6. Top and side direct supply |
| 1. Oscillating. | 7. Top ring supply. |
| 2. Reciprocating. | |
| 3. Rotary— | |
| 12. Feathering. | |

CLASS 162.—INJECTORS AND EJECTORS. (XVIII.)

No sub-classes.

CLASS 63.—JEWELRY. (V.)

Sub-classes.

- | | |
|------------------|--------------------------------|
| 1. Bracelets. | 11. Metal stock and ornamental |
| 2. Brooches. | wire fabric. |
| 1. Ear-rings. | 7. Ornamental chains. |
| 5. Finger-rings. | 10. Processes. |
| 8. Gem-setting. | 9. Watch-chain attachments. |
| 6. Lockets. | |

CLASS 64.—JOURNAL-BOXES, PULLEYS, AND SHAFTHING. (XII.)

Sub-classes.

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|---------------------------|----------------------|
| 4. Belt-shifters. | 17. Pulleys— |
| 5. Belt-tighteners. | 8. Expandable, |
| 6. Clutches. | 18. Split. |
| 7. Compensating journals. | 12. Shaft-casings. |
| 9. Flexible shafting. | 13. Shaft-couplings. |
| 10. Journal-boxes— | 14. Shaft-hangers. |
| 16. Roller-bearings. | |

CLASS 65.—KITCHEN AND TABLE ARTICLES. (VIII.)

Sub-classes.

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|----------------------------------|----------------------------|
| 1. Butter-dishes. | 22. Egg-cups. |
| 2. Butter, egg, and table tongs. | 23. Fish-scalers. |
| 3. Cake-trimmers. | 24. Fruit and cake dishes. |
| 6. Caster-bottles. | 25. Fruit-lifters. |
| 5. Casters. | 26. Jar-lifters. |
| 9. Cheese-covers. | 27. Knife racks and rests. |
| 10. Compound tools. | 28. Ladles. |
| 45. Condiment-holders. | 29. Napkin-holders. |
| 11. Corkscrews. | 30. Oyster-openers. |
| 12. Culinary. | 31. Pitchers. |
| 13. Cups. | 32. Plate-lifters. |
| 15. Dishes and plates. | 33. Provision-safes. |
| 16. Dish-covers. | 35. Salt-cellars. |
| 17. Dish-holders. | 36. Scoops. |
| 18. Dish-mats. | 38. Spice-boxes. |
| 19. Dish stands and trays. | 41. Tea-service. |
| 20. Dust-pans. | 42. Tumbler-holders. |
| 21. Egg-beaters. | 43. Twine-holders. |

CLASS 66.—KNITTING AND NETTING. (XXI.)

Sub-classes.

- | | |
|------------------------------------|------------------------------------|
| 1. Burrs and sinkers. | 7. Stopping. |
| Circular— | Straight— |
| 2. Circular machines. | 8. Straight machines. |
| 11. Loooper pin and hook machines. | 13. Fashioning-machines. |
| 17. Crocheting. | 14. Loooper pin and hook machines. |
| 3. Darning. | 15. Cams and stops. |
| 4. Fabrics. | 16. Warp-machines. |
| 12. Feeding. | 9. Take-ups and tensions. |
| 5. Needles. | 10. Tatting. |
| 6. Netting. | |

CLASS 67.—LAMPS AND GAS-FITTINGS. (XXX.)

Sub-classes.

- | | |
|-----------------------------------|------------------------------------|
| 43. Calcium and magnesium lights. | 32. Lamps— |
| 1. Caudlesticks. | 39. Bracket, |
| 3. Chandeliers. | 2. Car, |
| 4. Chimney-holders. | 42. Cigar-lighting. |
| 50. Decorative lights. | 16. Forced-draft. |
| 5. Drop-lights and hangers. | 17. Independent-reservoir, |
| 6. Extinguishers. | 19. Miners', |
| 7. Gas-burners— | 20. Safety-tube and central-draft, |
| 51. Incandescent, | 29. Street. |
| 52. Regenerative. | 24. Lanterns— |
| 40. Gas-extinguishers— | 35. Signal, |
| 8. Fittings, | 46. Submarine, |
| 41. Lighting devices. | 44. Tubular. |
| 9. Regulating-burners. | 45. Lantern-holders. |
| 33. Lamp-burners— | 25. Lighting devices. |
| 10. Argand, | 26. Locomotive head-lights. |
| 11. Multiple-wick, | 27. Match-safes. |
| 12. No-chimney. | 28. Reflectors. |
| 13. Lamp chimneys— | 37. Refracting attachments. |
| 14. Collars, | 34. Signal-lights. |
| 21. Posts, | 38. Torches. |
| 22. Shades, | 30. Vapor-burners. |
| 23. Wicks. | 31. Wick-raisers. |

CLASS 68.—LAUNDRY. (XXVII.)

Sub-classes.

- | | |
|------------------------------|------------------------------------|
| 1. Bosom-boards. | 29. Wash-boards. |
| 2. Clamps. | 30. Wash-boilers. |
| 34. Clothes-driers. | 31. Wash-tubs. |
| 12. Clothes-line fasteners. | Washing-machines— |
| 3. Clothes-lines. | 15. Agitator, |
| 4. Clothes-pins. | 16. Boiler, |
| 5. Clothes-pounders. | 17. Combined washing and wringing, |
| 4. Clothes-line reels. | 18. Cylinder, |
| 6. Clothes sticks and toogs. | 37. Miscellaneous, |
| 7. Floting-irons. | 19. Pounder, |
| 8. Hand-rubbers. | 20. Reciprocating rubber, |
| 19. Ironing-machines. | 21. Rocking and swinging. |
| 10. Ironing-tables. | 22. Roller, |
| 11. Laundries. | 23. Roller and bed, |
| 13. Mangles. | 24. Rotary rubber. |
| 26. Sad-irons. | 32. Wringers. |
| 27. Sad-iron holders. | 33. Wringer-rolls. |
| 28. Starching-machines. | |
| 35. Wash-benches. | |

CLASS 69.—LEATHER. (XI.)

Sub-classes.

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|--------------|---------------|
| 1. Cutting. | 4. Splitting. |
| 3. Machines. | |

CLASS 70.—LOCKS AND LATCHES. (XX.)

Sub-classes.

- | | |
|-----------------------|-----------------|
| 40. Baggage-seals. | 13. Latches— |
| 3. Box-fasteners. | 25. Gate, |
| 7. Key-fasteners. | 21. Reversible. |
| 8. Key-hole guards. | 14. Locks— |
| 9. Keys. | 1. Alarm, |
| 10. Knobs. | 2. Bag, |
| 11. Knob attachments. | 4. Car-seat, |
| 12. Knob-roses. | 5. Hasp, |

CLASS 70.—Continued.

Locks—

- | | |
|-------------------|------------------|
| 6. Indicator. | 18. Permutation. |
| 20. Piano. | 23. Seal. |
| 31. Sliding-door. | 25. Till. |
| 26. Time. | |

Locks—

- | | |
|---------------------|---------------------------------|
| 27. Trunk. | 15. Lock-strikes. |
| 16. Lock-trimmings. | 29. Locks and latches combined. |
| 17. Padlocks— | 19. Permutation. |
| 24. Shackles. | |

CLASS 74.—LUBRICATORS. (XII.)

Sub-classes.

- | | |
|-------------------------------|-------------------|
| 1. Capillary attraction. | 6. Liquefiers. |
| 2. Condensation displacement. | 7. Loose-pulley. |
| 3. Force-feed. | 8. Miscellaneous. |
| 4. Gravity-feed— | |
| 5. Automatic cut-off. | |

CLASS 74.—MACHINE ELEMENTS. (XII.)

Sub-classes.

- | | |
|----------------------------|------------------------------|
| 1. Cams and eccentrics. | 13. Machine-brakes. |
| 5. Crauks and levers. | 14. Mechanical movements. |
| 6. Fly-wheels. | 20. Overcoming dead-centers. |
| 7. Gearing— | 16. Pawls and ratchets. |
| 21. Belt. | 17. Pitmen. |
| 26. Frictional. | 27. Racks and pinions. |
| 8. Gibs and keys. | 18. Treadles. |
| 25. Intermittent grip— | 19. Universal joints. |
| 29. Strap and dog or ball, | |
| 30. Ratchet. | |

CLASS 115.—MARINE PROPULSION. (XXII.)

Sub-classes.

- | | |
|--|----------------------------|
| Propelling— | Paddle-wheels— |
| 1. Buoyant propellers, | 4. Feathering blades, |
| 2. Chain-propellers, | 22. Fitting and driving. |
| 3. Crank-paddles. | 23. Form and construction. |
| 6. Hydraulic propellers, | Screw-propellers— |
| 20. Interior power, | 14. Feathering blades, |
| 21. Motion of vessel, | 15. Fitting and driving. |
| 24. Oscillating propellers, | 16. Form and construction, |
| 8. Pneumatic propellers, | 17. Steering. |
| 12. Reciprocating propellers. | Towing— |
| 10. Steering-propellers, (except screw,) | 18. External power, |
| 13. Wheels in channel. | 19. Internal power. |

CLASS 72.—MASONRY. (IV.)

Sub-classes.

- | | |
|------------------------|------------------------------|
| 9. Apartment-houses. | 17. Foundations. |
| 10. Bonding and tying. | 18. Hollow tile walls. |
| 13. Cellars. | 7. Iron structures. |
| 12. Centering. | 19. Smoke and air flues. |
| 2. Cisterns. | 20. Stone and brick setting. |
| 14. Composite walls. | 21. Subways. |
| 3. Construction. | 23. Tile and metal floors. |
| 11. Coping. | 22. Timber-seats. |
| 16. Facing walls. | 24. Waste chutes and sinks. |
| 5. Fire-shields. | |

CLASS 73.—MEASURING-INSTRUMENTS. (XXIII.)

Sub-classes.

- | | |
|------------------------------|----------------------------------|
| 1. Air and gas meters. | 50. Pitch-boards. |
| 2. Anemometers. | 51. Planimeters. |
| 3. Balances. | 72. Plumb-bobs— |
| 74. Ballot-boxes. | 71. Levels. |
| 4. Barometers. | 31. Pressure-gages. |
| 5. Bathometers. | 63. Proportional meters. |
| 6. Bevels. | 32. Pyrometers. |
| 7. Calculators. | 33. Rain-gages. |
| 84. Calculators. Tabular | 34. Recorders. |
| 8. Cart-scales. | 35. Registers. |
| 56. Cash-indicators. | 36. Rotary measures. |
| 9. Cloth-measuring machines. | 37. Rotary meters. |
| 10. Coin-counters. | 38. Sack-scales. |
| 53. Coin-packages. | 39. Scale-beams. |
| 11. Coin-testers. | 40. Scale-measures. |
| 73. Conformators. | 41. Scale-pans. |
| 12. Diaphragm-meters. | 69. Ships' logs. |
| 13. Dividing-engines. | 64. Shoe-makers' measures. |
| 15. Dynamometers. | 42. Specific-gravity apparatus. |
| 75. Fare-boxes. | 43. Speed-measures. |
| 59. Fare-registers. | 44. Sphygmoscopes. |
| 16. Gages. | 70. Spirit-levels. |
| 77. Gages. Micrometer | 45. Spirit-meters. |
| 17. Game-counters. | 46. Spring-scales. |
| 19. Grain-meters. | 47. Squares. |
| 78. Grain-meters. Rotating | 66. Surface-gages. |
| 20. Grain-tallies. | 48. Tailors' measures. |
| 22. Hydrometers. | 49. Tape-measures. |
| 23. Hydrostatic scales. | 53. Thermometers. |
| 24. Hygrometers. | 54. Testing illuminating fluids. |
| 79. Lactometers. | 51. Testing-machines. |
| 63. Leather-measuring. | 52. Thermometers. |
| 76. Letter-boxes. | 65. Thermostats. |
| 60. Measuring-fancets. | 21. Tollers. |
| 61. Measuring-pumps. | 67. Track-gages. |
| 62. Measuring-vessels. | 53. Voting-machines. |
| 27. Odometers. | 54. Water-gages. |
| 28. Oscillating meters. | 52. Water-gages. Float |
| 53. Passenger-registers. | 55. Weather-vanes. |
| 29. Pendulum-scales. | 56. Weights. |
| 30. Piston-meters. | |

CLASS 185.—MECHANICAL MOTORS. (XII.)

Sub-classes.

- | | |
|------------------|-------------------|
| 1. Horse-powers— | 5. Miscellaneous. |
| 2. Equalizers, | 6. Spring. |
| 3. Treads. | 7. Weight. |
| 4. Manual. | |

CLASS 167.—MEDICINES. (VI.)

Sub-classes.

- | | |
|--------------------------|---------------------------|
| 1. Aerated beverages. | 6. Insecticides. |
| 2. Capsules. | 7. Internal remedies. |
| 3. Disinfectants. | 8. Plasters. |
| 4. Extracts. | 9. Topical remedies. |
| 5. Hair dyes and tonics. | 10. Veterinary medicines. |

CLASS 153.—METAL-BENDING. (XIV.)

Sub-classes.

- | | |
|--------------------|-----------------------|
| 1. Bending— | 5. Dishing. |
| 11. By press, | 6. Flanging— |
| 12. By rolls. | 7. Straight. |
| 2. Coiling. | 8. Straightening— |
| 3. Corrugating. | 9. Plates and sheets. |
| 4. Curving plates. | 10. Twisting. |

CLASS 10.—METAL BOLTS, NUTS, RIVETS, AND SCREWS.

(XIII.)

Sub-classes.

- | | |
|---|-------------------------------|
| 1. Bolts and nuts. Dressing and assembling. | 8. Screws. |
| 2. Bolts and rivets. | 9. Screw-black feeders. |
| 3. Bolts and rivets. Making | 10. Screw-cutting machines. |
| 4. Capping screws and nails. | 11. Screw-swaging machines. |
| 5. Metal-screw machines. | 12. Screw-tapping machines. |
| 6. Nuts and washers. | 13. Screw-threading machines. |
| 7. Nuts and washers. Making | 14. Taps and dies. |
| | 15. Wood-screw machines. |

CLASS 77.—METAL BORING AND DRILLING. (XIII.)

Sub-classes.

- | | |
|------------------------------------|------------------------|
| 1. Bits. | 5. Drills, Hand— |
| 2. Boring and drilling appliances. | 9. Ratchet. |
| 3. Boring-machines. | 6. Drilling-machines. |
| 4. Drill-chucks. | 7. Reamers and drifts. |
| | 8. Tapping mains. |

CLASS 78.—METAL-FORGING. (XIII.)

Sub-classes.

- | | |
|-------------------------|-------------------------|
| 1. Anvils. | 8. Olivers. |
| 17. Compositions. | 9. Power-hammers. |
| 16. Compressing. | 11. Riveting. |
| 3. Drop-hammers. | 18. Shafts and pulleys. |
| 4. Forges. | 19. Structural work. |
| 20. Forge-tuyeres. | 15. Upsetting metal. |
| 5. Forging and welding. | |

CLASS 22.—METAL-FOUNDING. (XIV.)

Sub-classes.

- | | |
|---------------------------------|-------------------------------|
| Metal molds— | Molded molds— |
| 1. Apparatus and plants, | 28. Molded molds. |
| 2. Chains, hinges, and joints, | 8. Molders' flasks— |
| 4. Hardware, | 29. Materials. |
| 5. Hollow ware, | 17. Tools and arts. |
| 7. Ingots— | 30. Ordnance and projectiles. |
| 9. Compound, | 31. Pipes— |
| 6. Hollow and tube, | 32. Horizontal. |
| 10. Plants. | 3. Pipe-elbows. |
| 11. Materials. | 33. Plants. |
| 12. Ordnance and projectiles. | 34. Plows. |
| 13. Pigs. | 35. Rolls. |
| 14. Plows. | 36. Screw-threads. |
| 15. Reils. | 37. Tools. |
| 18. Screw-threads. | 38. Vehicle-wheels. |
| 16. Soft-metal machines— | 39. Wheels. |
| 21. Molds, | Molding apparatus— |
| 10. Shot, | 40. Blacking molds, |
| 20. Spoons, | 41. Hollow ware, |
| 22. Traps, | 42. Machines, |
| 51. Type. | 43. Ordnance and projectiles, |
| 50. Tools. | 44. Pipes— |
| 23. Vehicle-wheels. | 45. Horizontal. |
| 24. Wheels. | 46. Pipe-cores. |
| Molded molds— | 47. Screw-threads. |
| 25. Chains, hinges, and joints, | 48. Vehicle-wheels. |
| 26. Hardware, | 49. Wheels. |
| 27. Hollow ware, | |

CLASS 75.—METALLURGY. (III.)

Sub-classes.

- | | |
|----------------------------|--------------------------------------|
| 1. Alloys. | Iron and steel direct— |
| Amalgamators— | 75. Gases, |
| 34. Electric, | 72. Retort-furnaces, |
| 35. Lead, | 76. Slag, |
| 36. Mercury, | 77. Sponge, |
| 37. Plate, | 15. Lead. |
| 33. Vacuum, | 16. Mechanical puddlers and tools. |
| 38. Vapor. | 22. Quicksilver. |
| 2. Assaying. | 17. Reducing and separating— |
| 90. Blow-pipes. | 57. Apparatus, |
| 7. Calcining-kilns. | 58. Aluminium, |
| 8. Coke and charcoal. | 62. Copper, |
| 3. Converters. | 59. Desilverizing lead, |
| 54. Drying air. | 60. Desulphurizing ores, |
| 30. Furnace-arresters. | 61. Disintegrating ores, |
| 10. Furnace-protecting— | 63. Flux, |
| 82. Fire-brick. | 64. Gold and silver, |
| Furnaces— | 85. Manganese, |
| 83. Annealing, | 66. Nickel and cobalt, |
| 5. Blast— | 65. Ore bricks. |
| 4. Accessories, | 23. Regenerators— |
| 96. Bells, | 95. Continuous or double surface, |
| 97. Tuyeres, | 91. Discontinuous or single surface. |
| 29. Crucible, | 34. Revolving roasters. |
| 9. Cupola, | 25. Roasting and smelting hearths. |
| 11. Gas— | 18. Solution and precipitation— |
| 81. Burners, | 86. Apparatus, |
| 88. Heating air and gas, | 67. Chlorination, |
| 78. Mixing air and gas, | 68. Electrolysis, |
| 80. Producers, | 69. Ferrie salts, |
| 40. For heating blanks, | 70. Parting bullion. |
| 41. Hydrocarbon— | 28. Spelter. |
| 42. Injector-burners, | 27. Treating molten iron— |
| 43. Retort-vaporizers, | 44. Air, steam, and gases, |
| 84. Melting— | 45. Alloys, |
| 89. Glass-pots, | 46. Basic, |
| 92. Pot-furnaces, | 87. Basic linings, |
| 93. Tank-furnaces, | 47. Granulating, |
| 19. Pigment, | 48. Oxides, |
| 20. Puddling, | 49. Physis, |
| 26. Shaft and shelf, | 50. Scrap. |
| 91. Slag. | 51. Vacuum. |
| Hot-blast ovens— | 55. Utilizing tin-scrap— |
| 52. Single surface, | 56. Wet processes. |
| 53. Double surface. | |
| 14. Iron and steel direct— | |
| 73. Bricks, | |
| 74. Flux, | |
| 71. Furnaces, | |

Sub-Classes in Metallurgy, with Explanatory Notes.

1. ALLOYS. Includes amalgams and dental alloys, alloys for coating metals, anti-oxidation alloys, alloys for journal-bearings, anti-friction metals, coin metal, bronze, and bell metal, non-magnetic alloys for watch-works, fusible alloys, type-metal, and white metal. Does not include mixtures of metals with non-metallic substances. (See Caoutchouc and Minor Plastics, Class 18, Division XV; and Lubricants, Class 87, Oils, Fats, and Glue, Division VI.) (See Treating Molten Iron, Alloys, for special steels, and alloys of iron, such as ferro-manganese, ferro-silicon, tungsten steel, &c.)
34. AMALGAMATORS, ELECTRIC. Includes raffle, plate, and pan amalgamators in which continuous and intermittent currents of electricity are passed through the ore pulp or mercury, or both, for the purpose of assisting the amalgamation.
35. AMALGAMATORS, LEAD. Furnaces and processes for separating precious metals wherein the ore containing the metal is passed through molten lead or alloys of lead, zinc, mercury, &c.
36. AMALGAMATORS, MERCURY. Construction and arrangement of pans, mullers, barrels, raffles, &c., for the ordinary amalgamation of the precious metals; also, processes in which chemicals are used to remove "rust," grease, &c., and "en-liven" the action of the mercury.
37. AMALGAMATORS, PLATE. Silver, copper, brass, and other metal plates coated with mercury, and arranged either in the sluiceways, raffles, or in connection with the pan, for the purpose of collecting the precious metals.
38. AMALGAMATORS, VACUUM. Apparatus and processes in which an exhaust is used to carry the ore through the mercury or lead contained in a closed vessel.
39. AMALGAMATORS, VAPOR. Apparatus and processes in which the ore is subjected to the vapor of mercury for the purpose of amalgamating the precious metals.
2. ASSAYING. Includes muffle and cupel furnaces; apparatus and burners used in assaying, &c.; also, methods of fire analysis.
7. CALCINING-KILNS. Stack-furnaces for roasting and desulphurizing metallic ores. (See Roasting and Smelting Hearths; and Shaft and Shelf Furnaces; and Lime-Kilns, Class 106, Division XV.)
8. COKE AND CHARCOAL. Processes of making coke; coke-ovens, and appliances for operating the same. Processes and kilns for charring wood. (See Distilling Wood, Class 23, Division VI.)

3. CONVERTERS. Includes apparatus for the pneumatic refining of iron; also, methods of operating converters, and tuyeres, tuyere-stoppers, bottoms, and blast appliances for same, and processes for lining. (For pneumatic processes see Treating Molten Iron, Air, Steam and Gases; and for Bessemer Plants see Metal-Founding, Division XIV.)
54. DRYING AIR. Apparatus for and methods of desiccating air by means of chloride of calcium, sulphuric acid, &c., for metallurgical purposes.
30. FUME-ARRESTERS. Devices for collecting dust from ore-furnaces and purifying waste gases. Does not include condensers for volatile metals. (See Quicksilver and Spelter; also, Gas-Purifiers, Class 48.)
10. FURNACE-PROTECTING. Devices for protecting furnace walls, hearths, doors, valves, tuyeres, &c., by air and water cooling. (See Furnaces, Blast, Tuyeres.)
32. FURNACE-PROTECTING, FIRE-BRICK. Compositions to be used in furnace-linings. Does not include lime or basic linings. (For which see Treating Molten Iron, Basic Linings.)
33. FURNACES, ANNEALING. Gas and coal burning furnaces for annealing glass.
5. FURNACES, BLAST. Form and general construction of furnaces for smelting iron ores, using either an air, steam, or gas blast. (See Cupola-Furnaces for blast-furnaces used in smelting lead and similar ores.)
4. FURNACES, BLAST, ACCESSORIES. Methods of and apparatus for feeding stock, except boppers and bells. Includes devices for utilizing waste gases and gas-seals. (See Gas-Furnaces; for heating blast, see Hot-Blast Ovens.) (See, also, Furnace-Protecting: Furnaces, Blast, Bells; and Furnaces, Blast, Tuyeres.)
95. FURNACES, BLAST, BELLS. Bell and hopper mechanism for charging stack-furnaces. (See Furnaces, Gas-Productors: Water-Gas, Class 48; and Hoisting, Class 57, Division XII.)
39. FURNACES, BLAST, TUYERES. Water and air cooled tuyeres and tuyere-pipes for blast-furnaces. (See, also, Furnaces, Blast, Accessories: Furnaces, Hydrocarbon, Injector Burners; and Blow-Pipes.)
29. FURNACES, CRUCIBLE. Coal, oil, or gas burning furnaces for heating crucibles, muffles, and retorts, for assayers, jewelers, &c. (See Furnaces, Melting, Pot-Furnaces.)
9. FURNACES, CUPOLA. Furnaces for remelting iron and smelting lead, silver, and other similar ores. Does not include Blast-Furnaces for smelting iron ores.
11. FURNACES, GAS. Apparatus for generating and burning gases in metallurgical and other furnaces.
31. FURNACES, GAS, BURNERS. Devices for burning gas in metallurgical furnaces. (See Furnaces, Hydrocarbon, Injector-Burners.) (For Illuminating-Gas Burners, see Class 67, Division XXX.)
38. FURNACES, GAS, HEATING AIR AND GAS. Furnaces with devices connected therewith for heating the air or gas, or both, including arrangements of flues, blast-pipes, &c., to insure the complete combustion of the gaseous fuel. Such furnaces include reverberatory, smelting, blast, reheating, open-hearth, and all other furnaces used for metallurgical purposes. (See Hot-Blast Ovens and Regenerators.)
78. FURNACES, GAS, MIXING AIR AND GAS. Furnaces provided with appliances for mixing gas and air either exterior to or within the combustion-chamber. (See Carburetors, Gas and Air Mixers; and Furnaces, Hydrocarbon.)
30. FURNACES, GAS-PRODUCERS. Gas-generators for metallurgical heating-furnaces which are either separated from or directly connected with the furnace in which the gas is consumed, but not including apparatus for generating gas for illuminating purposes. (See Class 48, Coal-Gas, Water-Gas, &c.)
40. FURNACES FOR HEATING BLANKS. Furnaces for heating ingots, pipe-skelps, gun-barrels, and blanks for bolts, car-wheels, and reheating-furnaces generally. Does not include Soaking-Pits. (See Class 22, Metal-Founding, Ingots, Plants, Division XIV; also, Class 75, Furnaces, Annealing, and Class 143, Metal Tempering, Annealing, and Cementation.)
41. FURNACES, HYDROCARBON. General apparatus for burning hydrocarbon oils in metallurgical furnaces, &c., where the oil is fed and burned upon trays, refractory material, water, &c.
42. FURNACES, HYDROCARBON, INJECTOR-BURNERS. Apparatus for injecting hydrocarbon oils, vapors, or gases, together with steam or air, or steam and air; also, apparatus in which the gases, &c., are mixed before injecting them into the furnace. (See Class 162, Injectors and Ejectors, Division XVIII; also, Class 67, Lamps and Gas-Fittings, Vapor-Burners, Division XXX.)
43. FURNACES, HYDROCARBON, RETORT-VAPORIZERS. Apparatus in which the oil is vaporized and the vapors heated, water converted into steam, and the steam superheated or decomposed; means for heating air and burners for consuming the commingled gases and vapors thus produced. (See Class 48, Oil Gas and Water-Gas; Class 67, Lamp and Gas Fittings, Vapor-Burners, Division XXX; and Class 126, Stoves and Furnaces, Vapor-Stoves, Division XIX.)
34. FURNACES, MELTING. Gas and coal burning furnaces for melting metals, glass, &c. (See Regenerators, &c.)
92. FURNACES, MELTING, GLASS-POTS. Structure of pots for melting glass for composition. (See Furnace Protecting, Fire-Brick; also, Class 25, Clay and Pottery, Division XV.)
91. FURNACES, MELTING, POT-FURNACES. Furnaces adapted to melting and working out glass in pots. (See Furnaces, Crucible.)
90. FURNACES, MELTING, TANK-FURNACES. Hearths adapted to melting glass.
19. FURNACES, PIGMENT. Processes of and apparatus for obtaining pigment. (See Fume-Arresters, Spelter, and Quicksilver, for similar apparatus.)
20. FURNACES, PUDDLING. Reverberatory furnaces in which pig-iron is melted and rabbled by hand, including special construction of fire-boxes, flues for heating air, &c.
26. FURNACES, SHAFT AND SHELF. Furnaces for roasting ores, consisting of upright stacks, either clear or provided with shelves or partitions for delaying the progress of the ore, fully exposing it to the action of the heat.
97. FURNACES, SLAG. Processes of and apparatus for utilizing slag.
52. HOT-BLAST OVENS, SINGLE-SURFACE. Recuperators or discontinuous stoves for heating air; also, water-cooled valves used in hot-blast-oven flues. (See Furnace-Protecting, Fire-Brick.)
53. HOT-BLAST OVENS, DOUBLE-SURFACE. Pipe or continuous stoves for heating air for blast-furnaces, converters, &c. Air is passed through externally-heated pipes, tubes, or chambers. (See Furnaces, Gas, Heating Air and Gas; and Regenerators, Continuous.)
14. IRON AND STEEL DIRECT. Processes of manufacturing wrought-iron and steel directly from ore or sponge. (See Treating Molten Iron.)
71. IRON AND STEEL DIRECT, FURNACES. Apparatus employed in the direct production of wrought-iron or steel. (See Iron and Steel Direct, Retort-Furnaces; also, Furnaces, Blast.)
72. IRON AND STEEL DIRECT, RETORT-FURNACES. Apparatus for reducing ores and making sponge-iron direct from the ores, in which the charge is placed in retorts which are heated internally or externally by furnace-gases, the product being subsequently reduced in a hearth usually connected with the retorts.
73. IRON AND STEEL DIRECT, BRICKS. Cylinders, blocks, and bricks of iron ore made up with or without fuel or flux; also, construction and arrangement of furnaces for reducing the same.
1. IRON AND STEEL DIRECT, FLUX. Compositions used in the reduction of iron ore, either in the direct or indirect processes.
74. IRON AND STEEL DIRECT, GASES. Processes for obtaining wrought-iron and steel from iron ores and for deoxidizing ores preparatory to smelting in blast-furnaces by means of gases or gaseous fuel.
76. IRON AND STEEL DIRECT, SLAG. Methods of utilizing furnace-slag and cinder in the manufacture of iron by the ordinary smelting processes.
77. IRON AND STEEL DIRECT, SPONGE. Processes of producing iron and steel sponge by heating iron ore in retorts with carbon.
15. LEAD. Hearth and blast furnaces for smelting lead ores and processes for same; also, apparatus for refining lead. Includes "Scotch hearths," but not water-jacketed lead-smelters. (See Furnaces, Cupola.)
16. MECHANICAL PUDDLERS AND TOOLS. Revolving or removable hearths or cylinders, horizontal and inclined. Devices for puddling and balling iron mechanically, including rabblers, mixers, cutters, &c. (See Revolving Roasters.)
92. QUICKSILVER. Processes of and apparatus for separating mercury from its ores and amalgams, including furnaces, retorts, collectors, condensers, and strainers; also, apparatus for retorting, purifying, and separating amalgams. (See Alloys.)
17. REDUCING AND SEPARATING. Processes of reducing and separating metals from their ores by application of heat, including processes in which the ore is melted by heat electrically generated, and reducing processes not otherwise classified, exclusive, however, of amalgamation.
57. REDUCING AND SEPARATING, APPARATUS. Special apparatus for treating ores and metals, not otherwise classified. (See Revolving Roasters, Roasting and Smelting Hearths, and Furnaces, Cupola.)
58. REDUCING AND SEPARATING, ALUMINIUM. Processes and apparatus for obtaining aluminium and other metals of the alkaline earths.
62. REDUCING AND SEPARATING, COPPER. Furnace processes for purifying and refining copper and extracting the same from ores and matte.
59. REDUCING AND SEPARATING, DESILVERIZING LEAD. Processes of and apparatus for separating silver and gold from bullion by Parke's, Pattison's, and other furnace methods. (See Reducing and Separating Gold and Silver.)
60. REDUCING AND SEPARATING, DESULPHURIZING ORE-. Processes, apparatus, and compounds for freeing metallic ores (principally those of copper, gold, and silver) from sulphur. (See Calcining-Kilns: Roasting and Smelting Hearths; Furnaces, Shaft and Shelf.)

61. **REDUCING AND SEPARATING, DISINTEGRATING ORES.** Processes in which hot ore is dumped into water or chemical solutions preparatory to amalgamating or desulphurizing, and also processes for comminuting copper and other metals in a similar manner.
63. **REDUCING AND SEPARATING, FLUX.** Compositions of fluxes used in the reduction of metals.
64. **REDUCING AND SEPARATING, GOLD AND SILVER.** Processes of and apparatus for separating the precious metals from ores, speiss, amalgams, &c. (See Amalgamators; Solution and Precipitation, Chlorination; and Reducing and Separating, Disintegrating Ores and Desulphurizing Ores.)
85. **REDUCING AND SEPARATING, MANGANESE.** Processes of and apparatus for obtaining manganese from its ores and for the manufacture of ferro-manganese and spiegeleisen.
66. **REDUCING AND SEPARATING, NICKEL AND COBALT.** Processes of separating nickel and cobalt from their ores by furnace operations.
65. **REDUCING AND SEPARATING, ORE BRICKS.** Processes of forming bricks, blocks, lumps, and cakes of crushed or pulverized ore, especially ores of precious metals, preparatory to roasting. (See Iron and Steel Direct, Ore Bricks.)
23. **REGENERATORS.** Includes devices for reversing the direction of the gaseous currents, valves, and special constructions of brick. (See Furnace-Protecting, Fire-Brick; Furnaces, Gas; and Hot-Blast Ovens.)
94. **REGENERATORS, CONTINUOUS OR DOUBLE SURFACE.** Structures of the Ponsard type, with separate flues for the air and for the waste gases; for utilizing waste heat, as applied to metallurgical furnaces, especially open-hearth furnaces. (See Hot-Blast Ovens, Double-Surface.)
93. **REGENERATORS, DISCONTINUOUS OR SINGLE SURFACE.** Structures of the Siemens type, containing only a single system of passages; for utilizing waste heat, as applied to metallurgical furnaces, especially open-hearth furnaces. Waste gases and air are alternately passed through the flues, heating them and heated by them, respectively. (See Hot-Blast Ovens, Single Surface; and Furnaces, Gas, Heating Air and Gas.)
24. **REVOLVING ROASTERS.** Furnaces with one or more revolving chambers or cylinders for roasting, oxidizing, chloridizing, and desulphurizing ores. (See Mechanical Puddlers and Tools.)
25. **ROASTING AND SMELTING HEARTH.** Hearth-furnaces for roasting and smelting metallic ores. (See, also, Revolving Roasters; Reducing and Separating; and Furnaces, Puddling.)
18. **SOLUTION AND PRECIPITATION.** Processes of and compounds for obtaining metals from solutions of ores, waste jewelers' solutions, leaching solutions, &c. (See Solution and Precipitation, Electrolysis; and Coating with Metal, Electro-Deposition.)
57. **SOLUTION AND PRECIPITATION, APPARATUS.** Special apparatus employed in solving processes not classified elsewhere in sub-classes of Solution and Precipitation.
67. **SOLUTION AND PRECIPITATION, CHLORINATION.** Processes of and compounds for chloridizing ores by subjecting the ore to the action of chlorine gas or chlorine solutions, and leaching them after chlorination. (See Revolving Roasters, and Roasting and Smelting Hearths.)
68. **SOLUTION AND PRECIPITATION, ELECTROLYSIS.** Processes of and apparatus for the electrolytic separation and purification of metals from their ores and alloys by solving operations; also, for chloridizing ores by electricity. (See Coating with Metal, Electro-Deposition.)
69. **SOLUTION AND PRECIPITATION, FERRIC SALTS.** Processes of and apparatus for treating ores of copper, silver, and gold by means of solutions of ferric salts.
70. **SOLUTION AND PRECIPITATION, PARTING BULLION.** Processes for refining bullion by dissolving silver in acid, and subsequent precipitation.
22. **SPELTER.** Processes and apparatus for obtaining metallic zinc from its ores, including furnaces, retorts, condensers, and appliances for operating them. (See Pigment-Furnaces and Fume-Arresters.)
27. **TREATING MOLTEN IRON.** Miscellaneous processes and apparatus for treating molten iron for the production of wrought iron and steel. (See Converters, and Iron and Steel Direct.)
44. **TREATING MOLTEN IRON; AIR, STEAM, AND GASES.** Processes and apparatus for treating molten iron with currents of air, steam, or gas, for the purpose of purifying the same or converting it into steel. (See Converters.)
45. **TREATING MOLTEN IRON, ALLOYS.** Processes and compounds of metals which are added to molten iron to produce an alloy of iron or steel; such as chrome, manganese, and tungsten steels.
46. **TREATING MOLTEN IRON, BASIC.** Processes of removing phosphorus by treating molten iron with lime, magnesia, and similar materials, either as additions or as the lining of the vessel in which the metal is placed, by uniting with which, to form a slag, the phosphorus is eliminated.

87. **TREATING MOLTEN IRON, BASIC LININGS.** Bricks or linings of lime, magnesia, &c. (See Furnace-Protecting, Fire-Brick.)
47. **TREATING MOLTEN IRON, GRANULATING.** Processes of granulating molten iron, and for treating iron prepared in this way or mechanically subdivided.
48. **TREATING MOLTEN IRON, OXIDES.** Decarbonizing crude molten iron by the use of iron oxides, nitrates, &c., either as additions or furnace-linings.
49. **TREATING MOLTEN IRON, PHYSIC.** Miscellaneous compounds which, when added to molten iron or steel, serve to purify, decarbonize, or, by uniting with the same, to improve the quality of the steel.
50. **TREATING MOLTEN IRON, SCRAP.** Processes of melting and utilizing iron and steel scraps, turnings, &c. (See Utilizing Tin-Scrap.)
51. **TREATING MOLTEN IRON, VACUUM.** Processes of treating molten iron in vessels from which air can be exhausted for the purpose of inducing a current of air through the molten mass, or removing gases therefrom. (See Furnaces, Cupola.)
55. **UTILIZING TIN-SCRAP.** Dry or furnace processes for separating tin and iron from tin-scrap by means of heat.
6. **UTILIZING TIN-SCRAP, WET PROCESSES.** Apparatus for and processes of separating tin, zinc, &c., from iron by chemical solutions, with or without the aid of electricity.

CLASS 79.—METAL PERSONAL WEAR. MAKING (XIII.)

Sub-classes.

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|------------------------|-----------------------------|
| 1. Buttons and clasps. | 4. Personal wear. |
| 2. Eyelets. | 5. Thimbles. Manufacture of |
| 3. Ornamental chains. | 6. Watches and clocks. |

CLASS 80.—METAL-ROLLING. (XIII.)

Sub-classes.

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|-------------------------------|-------------------------------------|
| 11. Angle irons. | 5. Puddlers' balls. |
| 12. Compound plates and bars. | 6. Railroad-rails. |
| 1. Cylindrical. | 13. Reworking. |
| 2. Foil. Manufacture of | 7. Rolling. Miscellaneous |
| 3. Mill appliances. | 9. Sheet and hoop iron manufacture. |
| 4. Piles and fagots. | 10. Taper. |
| 8. Plates and bars. | |

CLASS 148.—METAL TEMPERING, ANNEALING, AND CEMENTATION. (III.)

Sub-classes.

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|------------------------------------|-----------------------------|
| 7. Cementation and case-hardening. | Tempering and annealing— |
| 8. Decarbonizing. | 3. Metals generally, |
| 9. Tempering and annealing— | 12. Metals other than iron, |
| 10. Applications of electricity, | 4. Sheet and plate metal, |
| 11. Compositions, | 5. Wheels and tires, |
| | 6. Wire and springs. |

Sub-Classes in Metal Tempering, Annealing, and Cementation, with Explanatory Notes.

7. **CEMENTATION AND CASE-HARDENING.** Processes of and apparatus for cementation and case-hardening; also, compositions for the entire or superficial conversion of wrought-iron into steel.
8. **DECARBONIZING.** Processes of and apparatus for decarbonizing cast-iron; also, compositions for the conversion of cast-iron into steel.
9. **TEMPERING AND ANNEALING.**
10. **TEMPERING AND ANNEALING, APPLICATIONS OF ELECTRICITY.** Processes of and apparatus for the application of electricity to heating and annealing.
11. **TEMPERING AND ANNEALING, COMPOSITIONS.** Chiefly compositions used in connection with the hardening process.
3. **TEMPERING AND ANNEALING, METALS GENERALLY.** Processes of and apparatus for tempering and annealing not specifically included in the other classes.
12. **TEMPERING AND ANNEALING, METALS OTHER THAN IRON.** Processes of and apparatus for tempering and annealing copper and metals other than iron or steel.
4. **TEMPERING AND ANNEALING, SHEET AND PLATE METAL.** Processes of and apparatus for tempering and annealing sheet and plate metal, such as saws.
5. **TEMPERING AND ANNEALING, WHEELS AND TIRES.** Processes of and apparatus for tempering and annealing wheels and tires.
6. **TEMPERING AND ANNEALING, WIRE AND SPRINGS.** Processes of and apparatus for tempering and annealing wire and springs.

CLASS 76.—METAL TOOLS AND IMPLEMENTS. MAKING
(XIII.)

Sub-classes.

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|--------------------------------------|--|
| 1. Augers. | 14. Pitchforks. |
| 2. Axes and hatchets. | 15. Plow-irons. |
| 27. Compound metal-working machines. | 16. Rake and harrow irons. |
| 3. Cultivator-irons. | 26. Saw clamps and jointers. |
| 4. Dies. | 19. Saw-setting. |
| 5. Drills. | 22. Saw-swaging. |
| 6. Farm implements. | 17. Saws. |
| 7. File-blanks. | 18. Saws. Gumming |
| 8. File-cutting. | 20. Saws. Sharpening reciprocating tool- |
| 9. Files and rasps. | 21. Saws. Sharpening rotary tool- |
| 10. Hammers. | 23. Scythes. |
| 11. Harvester-irons. | 24. Tools and implements. |
| 12. Hoes and shovels. | 25. Wrenches |
| 13. Picks and mattocks. | |

CLASS 134.—METAL TUBING AND WIRE. (XIII.)

Sub-classes.

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|---------------------------------|---------------------|
| 1. Coiling and bending pipe. | 15. Rods for wire. |
| 10. Drawing. | 6. Tubes. |
| 2. Lead pipe. Making | 11. Tubing, Lapped— |
| 3. Lightning-rods. Making | 12. Rolled, |
| 4. Lining cylinders with metal. | 13. Seamless. |
| 5. Plumbers' traps. Making | 16. Wire. |
| 14. Reeling. | 8. Wire. Pointing |

CLASS 82.—METAL TURNING, PLANING, AND MILLING.
(XIII.)

Sub-classes.

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|----------------------------------|---------------------------|
| 1. Centerers. | Planers— |
| 2. Cutters and cutter-holders. | 12. Rotary bed or cutter. |
| 4. Gear-cutting. | 13. Rests. |
| 5. Key-seat cutters. | 14. Shaping and slotting. |
| 6. Lathe-chucks. | Turning— |
| 7. Mandrels and work-holders. | 15. Irregular forms, |
| 8. Milling. | 16. Miscellaneous, |
| 9. Milling-cutters. | 17. Tapers, |
| 10. Planer-chucks. | 18. Wheels and axles. |
| Planers— | 19. Watch-makers' lathes. |
| 11. Reciprocating bed or cutter, | 20. Wrist-pin turners. |

CLASS 81.—METAL-WORKING TOOLS. (XXVIII.)

Sub-classes.

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|-------------------------------|-------------------------------|
| 26. Bolt-holders. | Pipe-wrenches— |
| 23. Cutting sharpeners. | 28. Chain. |
| 24. Nippers. | 13. Pivoted-jaw, |
| Nut-wrenches— | 14. Pivoted-jaw, with cutter, |
| 5. Pivoted and spring-jaw, | 15. Rigid-jaw and spanner, |
| 6. Ratchet-wheel, | 16. Sliding-jaw, |
| 7. Rigid-jaw, | 17. Sliding-jaw, with cutter. |
| 8. Rigid-socket and axle-nut, | 25. Pliers. |
| 9. Sliding-jaw, | 13. Rod and bolt cutters. |
| 27. Wheel. | 19. Smiths' tongs. |
| Pipe-cutters— | Vises— |
| 10. Inside, | 20. Pipe and rod, |
| 11. Outside. | 21. Smiths', |
| 12. Pipe-expanders. | 22. Wood-workers'. |

CLASS 83.—MILLS. (XXV.)

Sub-classes.

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|--------------------------------|-----------------------------|
| Bagging grain— | Grinding-mills— |
| 26. Bag-holders. | 13. Cone and shell, |
| Chop-graders— | 12. Crushing-rolls, |
| 50. Bran-dusters, Beaters, | 14. Cylinder and concave, |
| 51. Bran-dusters, Brushes, | 7. Disk-action, Horizontal, |
| 49. Electric purifiers, | 8. Disk-action, Vertical, |
| 42. Flour processes, | 44. Feed-regulators, |
| 40. Gravity, | 15. Grain-samplers, |
| 39. Rotary bolts, | 16. Grist-alarms, |
| 38. Shaking bolts. | 23. Hominy, |
| Dust-collectors— | 46. Impact pulverizers, |
| 47. Reciprocating, | 6. Knife-action, |
| 48. Rotating. | 1. Mill-spindles, |
| Grain-scourers— | 3. Millstone-dress, |
| 32. Centrifugal, | 4. Millstone-exhaust, |
| 36. Concave face, | 2. Millstone-trans, |
| 31. Conical, | 22. Paint, |
| 30. Cylinder, Horizontal, | 11. Rotary beaters. |
| 29. Cylinder, Vertical. | Ore and coal— |
| 37. Disk-face, | 52. Coal-breakers. |
| 33. Pestle-action, | 53. Crushers. |
| 35. Reciprocating and endless, | Separators— |
| 34. Screw-action. | 54. Dry, |
| Grinding-mills— | 58. Jiggers, |
| 17. Balancing millstones, | 59. Washers, |
| 9. Ball and drum, | 56. Sifters and screens— |
| 21. Bark, | 60. Household, |
| 19. Cane, | 57. Stamps. |
| 45. Chasing, | Preparing grain— |
| 18. Coffee, | 23. Processes, |
| 10. Compound movement, | 27. Steaming and dampening. |

CLASS 84.—MUSIC. (V.)

Sub-classes.

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|---|---------------------------------|
| 1. Accordions. | Pianos— |
| 53. Auxiliary strings. | 70. Sostenuto, |
| 2. Banjos and guitars. | 62. Upright, |
| 6. Castanets. | 31. Without strings. |
| 7. Clarionets and flutes. | 26. Piano-actions— |
| 55. Combined organ and piano. | 65. Horizontal, |
| 54. Combination organ stop-actions. | 60. Pedal, |
| 8. Cornets and trumpets. | 64. Upright. |
| 9. Couplers. | 66. Piano agraffes and bridges— |
| 10. Drums. | 27. Attachments, |
| 81. Electric actions. | 52. Cases, |
| 11. Exercising devices. | 28. Frames, |
| 13. Harmonicas. | 29. Legs, |
| 12. Harmonic attachments— | 30. Sound-boards, |
| 56. Dampers. | 40. Stringing, |
| 14. Harps. | 67. Tuning-pins. |
| 48. Indicators. | 32. Pipe-organs. |
| 15. Insulators. | 68. Recording attachments. |
| 57. Key-board self-playing attachments. | 33. Reeds. |
| 58. Key-holding devices. | 34. Reed-boards— |
| 16. Keys and key-boards. | 35. Organs, |
| 49. Knee-swells. | 36. Organ attachments. |
| 17. Leaf-turners. | 37. Self-playing instruments— |
| 79. Mouth-pieces. | 71. Cylinder, |
| 18. Notation. | 51. Pneumatic. |
| 19. Organ-actions— | 69. Solo attachments. |
| 50. Pneumatic, | 38. Steam-organs. |
| 20. Bellows, | 41. Transposers. |
| 21. Cases, | 42. Tremolos. |
| 22. Pipes, | 43. Tuning-instruments. |
| 59. Stop-actions, | 44. Violins— |
| 23. Swells, | 76. Practice. |
| 47. Wind-chests. | 72. Violin-bows— |
| 24. Pedals. | 73. Bridges, |
| 61. Pianissimo devices. | 74. Chin-rests, |
| 25. Pianos— | 75. Dampers and mutes, |
| 63. Horizontal, | 77. Tail-pieces, |
| | 78. Tuning-pegs. |
| | 80. Zithers. |

CLASS 85.—NAILS AND SPIKES. (XIII.)

Sub-classes.

- | | |
|------------------------------------|---------------------------|
| 1. Cut-nail making. | 8. Nail-plate feeders. |
| 3. Horseshoe-nail-blank finishing. | 9. Nails and spikes. |
| 2. Horseshoe-nail cutting. | 15. Shoe nails and tacks. |
| 4. Horseshoe-nail forging. | 16. Spike-making. |
| 6. Nail-distributors. | 17. Wrought-nail making. |

CLASS 163.—NEEDLES AND PINS. (XIII.)

Sub-classes.

- | | |
|----------------------------|---------------------------|
| 1. Machine-needles. Making | 5. Pins. Papering |
| 4. Pins. Making | 6. Sewing-needles. Making |

CLASS 151.—NUT AND BOLT LOCKS. (XXVIII.)

Sub-classes.

- | | |
|---------------------------|-----------------------------|
| 9. Base. | 5. Thread. |
| 1. Base, key and ratchet. | 6. Thread, key and ratchet. |
| 2. Base, washer. | 7. Top. |
| 3. Side. | 8. Top, key and ratchet. |
| 4. Side, key and ratchet. | |

CLASS 87.—OILS, FATS, AND GLUE. (VI.)

Sub-classes.

- | | |
|---------------------------|------------------------------------|
| 17. Adhesives. | 9. Lubricants. |
| 18. Artificial butter. | 10. Lubricating. Treating oils for |
| 1. Barrel-linings. | 12. Refining fat oils. |
| 2. Bleaching. | 13. Rendering. |
| 3. Candles and apparatus. | 14. Soap. |
| 4. Decomposing fats. | 15. Soap-cutting. |
| 5. Detergents. | 16. Soap-manufacture. |
| 6. Extracting oils. | 19. Wax. |
| 7. Glue. | 20. Wool-oils. |
| 8. Lard-coolers. | |

CLASS 88.—OPTICS. (XXIII.)

Sub-classes.

- | | |
|--------------------------|----------------------------|
| 1. Altitude-instruments. | 10. Prisms. |
| 19. Compasses. | 11. Sextants. |
| 2. Distance-instruments. | 12. Spectacles. |
| 3. Heliostats. | 22. Spectacle-cases. |
| 4. Kaleidoscopes. | 13. Stakes and targets. |
| 5. Lenses. | 14. Stereoscopes. |
| 6. Leveling-instruments. | 17. Surveying-instruments. |
| 7. Magic lanterns. | 15. Telescopes. |
| 8. Microscopes. | 21. Testing-instruments. |
| 20. Optometers. | 16. Tripods. |
| 9. Photometers. | |

CLASS 89.—ORDNANCE. (XXII.)

Sub-classes.

- | | |
|----------------------------|--------------------------|
| 1. Breech-loading. | 10. Mortars. |
| 2. Carriages. | 11. Muzzle-loaders. |
| 19. Cartridge-feed cases. | 12. Operating ordnance. |
| 3. Counterpoise-carriages. | 22. Pneumatic. |
| 4. Disabling. | 13. Shields. |
| 21. Electrical appliances. | 15. Submarine guns. |
| 7. Loading. | 16. Tompions and valves. |
| 20. Locks— | 17. Trunnions. |
| 23. Recoil-operated. | 18. Vents and stoppers. |
| 9. Machine-guns. | |

CLASS 150.—PACKING AND STORING VESSELS. (XIV.)

Sub-classes.

Cloth, leather, and rubber—
 134. Bag-fasteners.
 128. Bags.
 129. Baskets and buckets.
 130. Boxes.
 131. Unclassified.

Glass and pottery—

11. Bottles and jugs—
 126. Neck-collars.
 135. Brush and spreader.
 42. Bottle-taps.
 43. Boxes and tanks.
 18. Ejectors.
 12. Jackets—
 81. Stands.
 74. Wrapper.
 44. Jars—
 73. Clamp.
 96. Expanding-stopper.
 75. Screw-cap.
 97. Screw-stopper.
 79. Swing-cover.
 80. Swing-fastener.
 15. Stopper-fasteners—
 77. Cap and tie.
 99. Screw-cap.
 86. Swing.
 87. Swing-stopper—
 164. Aside.
 165. Yoke.
 166. Yoke and lever.
 167. Yoke and top levers.
 16. Stopper-locks.
 107. Stopper-pullers.
 17. Stoppers—
 105. Cap.
 145. Dose.
 88. Expanding.
 48. Internal.
 147. Rotary.
 53. Screw—
 106. Cap.
 146. Tube.
 49. Valve—
 124. Screw.
 125. Siphon.

Metallic vessels—

47. Baskets and crates.
 29. Boxes—
 85. Blacking.
 137. Compartment.
 83. Knockdown.
 84. Pocket.
 51. Canisters.
 30. Cans and unclassified vessels—
 100. Single-blank.
 54. Casks.
 55. Closures—
 56. Clamp.
 57. Screw-cap.
 98. Screw-stopper.
 58. Seam or solder.
 108. Swing-cover.
 52. Seal-scuttles.
 110. Ears and bails.
 111. Handles.
 33. Hermetic sealing.
 34. Jackets—
 62. Cask.
 63. Package.
 123. Stand.
 61. Jackets and stands. Swing
 64. Linings.
 36. Milk-cans.
 37. Nozzles and vents—
 65. Screw-cap.
 114. Screw.
 66. Valve—
 115. Screw.
 72. Pistons and stirrers.
 50. Slop-buckets.

Metallic vessels—

116. Spouted—
 117. Feeders—
 118. Piston.
 119. Stands—
 120. Pump.
 121. Storage.
 122. Transport.

Paper vessels: bags—

142. Bags—
 143. Closures.
 144. Square-bottom.

Paper vessels: barrels and pails—

82. Barrels.
 148. Pails.

Paper vessels: Boxes. Angular—

149. Boxes, Angular—
 150. Blanks, Plural.
 151. Compartment—
 152. Folded.
 153. End folds.
 154. Side and end folds.
 155. Side folds.
 156. Side folds and end laps.
 157. End laps.
 158. Side and end laps.
 159. Side laps.
 160. Slide.
 161. Stays.

Paper vessels: Boxes. Curved—

162. Boxes, Curved—
 163. Compartment.

Wooden vessels: barrels, buckets, and pails—

132. Barrels—
 1. Bent.
 168. Stand.
 101. Bungs—
 102. Expanding.
 103. Plug.
 4. Bungs and vents.
 5. Bung-wrenches.
 133. Closures—
 127. Screw and bayonet.
 6. Covers.
 7. Hoops.
 8. Linings and coverings.
 10. Stands.

Wooden vessels: baskets—

41. Baskets—
 91. Covered.
 67. Folding.

Wooden vessels: boxes—

19. Boxes—
 94. Closures.
 140. Compartment.
 169. Bent—
 92. Closures.
 136. Linings and coverings.
 93. Single blank.
 95. Block.
 20. Can and bottle cases.
 21. Cell-cases—
 68. Cloth or cord cells.
 141. Paper box.
 69. Paper cells.
 70. Wood cells.
 71. Wood-veneer cells.
 22. Crates.
 23. Crates and boxes, Folding—
 109. Knockdown.
 104. Linings and coverings.
 27. Powders. Cases for
 113. Stays. Corner-
 112. Straps.

CLASS 91.—PAINTING. (VI.)

Sub-classes.

- | | |
|----------------------------|--------------------------|
| 2. Enameling wood. | 20. Painting. |
| 3. Fireproofing compounds. | 11. Painting-machines. |
| 4. Graining. | 12. Paint-mixers. |
| Ink— | 22. Pigments. |
| 21. Indelible, | 13. Stencils. |
| 5. Printing, | 14. Stove-polishes. |
| 6. Writing. | 15. Striping. |
| 7. Japanning. | 16. Varnishes. |
| 8. Lamp-black. | 17. Varnishing-machines. |
| 9. Mixed paints. | 19. White lead. |

CLASS 92.—PAPER-MAKING. (XV.)

Sub-classes.

- | | |
|---------------------------------------|----------------------------------|
| 1. Bleaching. | 12. Ornamenting. |
| 2. Bronzing-machines. | 13. Paper-board. |
| 3. Calendering. | 14. Paper-hanging machines. |
| 24. Carpet-lining. | 15. Paper-making machines. |
| 4. Coating. | 16. Parchment. |
| 5. Digesters. | 17. Processes. |
| 6. Disintegrating fibrous substances. | 18. Pulp-engines and bed-plates. |
| 7. Fabrics. | 19. Pulp washing and straining. |
| 8. Fibers. | 20. Rag dusters and engines. |
| 9. Flocking. | 21. Stock-grinders. |
| 10. Materials. | 22. Waterproofing and sizing. |
| 11. Molding machines and articles. | 23. Wood-grinders. |

CLASS 93.—PAPER-MANUFACTURES. (XVII.)

Sub-classes.

- | | |
|---------------------------------------|---------------------------------|
| 2. Articles. | 15. Envelopes. |
| 3. Attaching labels. | 16. Envelope-machines. |
| 5. Bag-machines. | 17. Feeding. |
| 6. Bank notes, checks, and bonds. | 18. Folding. |
| 10. Box-machines. | 19. Label and tag machines. |
| 11. Collar, cuff, and bosom machines. | 21. Perforating and lace paper. |
| 13. Cutters. Reciprocating | 22. Postage and revenue stamps. |
| 14. Cutters. Rotary | 23. Tickets. |
| | 24. Tube-machines. |
| | 25. Wrapping-machines. |

CLASS 94.—PAVING. (XV.)

Sub-classes.

- | | |
|--------------|------------------|
| 2. Gutters. | Pavements— |
| Pavements— | 8. Wood. |
| 1. Concrete, | 4. Road-rammers. |
| 3. Iron, | 6. Tools. |
| 5. Stone, | 7. Vault-covers. |

CLASS 95.—PHOTOGRAPHY. (V.)

Sub-classes.

- | | |
|--------------------------------|------------------------------|
| 34. Actinometers. | 14. Eye-rests. |
| 1. Backgrounds and reflectors. | 31. Galleries. |
| 2. Baths. Chemical | 15. Head-rests. |
| 3. Baths. Mechanical | 16. Heaters and driers. |
| 4. Burnishers. (Presses.) | 17. Mechanical printing. |
| 5. Cameras. | 18. Mounts and mounting. |
| 6. Camera attachments— | 19. Negatives. |
| 37. Shutters, | 32. Photosculpture. |
| 7. Stands, | 22. Pictures. |
| 8. Coloring. | 36. Plate-holders. |
| 30. Combined apparatus. | 25. Printing and vignetting. |
| 9. Daguerreotypy. | 29. Processes. |
| 10. Dark-chambers. | 26. Retouching. |
| 11. Dippers. | 33. Roller-holders. |
| 12. Embossing. | 35. Surfaces. |
| 13. Enameling. | 28. Washing apparatus. |

CLASS 97.—PLOWS. (I.)

Sub-classes.

- | | |
|-----------------------------|----------------------------|
| 1. Attachments. | 15. Handles. |
| 2. Beams. | 17. Landsides. |
| 3. Cleaners. | 18. Mold-boards. |
| 4. Clevises. | 21. Plows— |
| 5. Corn-coverers. | 12. Ditching, |
| 6. Colters. | 16. Hand, |
| 7. Couplings. | 19. Mole, |
| 8. Cotton-choppers. | 26. Shovel, |
| 9. Cotton-scrappers. | 27. Side-hill, |
| 10. Cultivators— | 30. Steam, |
| 20. Parallel, | 36. Wheel. |
| 25. Rotary, | 22. Points. |
| 31. Straddle-row, | 23. Revolving mold-boards. |
| 34. Wheel— | 24. Ridgers. |
| 35. Straddle-row. | 29. Sod-cutters. |
| 11. Cultivator-teeth. | 23. Standards. |
| 37. Draft-eveners. | 32. Subsoilers. |
| 13. Fenders. | 33. Weed-turners. |
| 14. Gage wheels and runners | |

CLASS 98.—PNEUMATICS. (XXVIII.)

Sub-classes.

- | | |
|-----------------------|-------------------------|
| 1. Aerial navigation. | 28. Fan attachments. |
| Air and gas pumps— | 27. Fans, Automatic— |
| 31. Hydraulic. | 29. Toilet. |
| 32. Mechanical. | 15. Sand-blowers. |
| 33. Mercury. | Ventilation— |
| 34. Rotary. | 7. Car. |
| 5. Bellows. | 10. Grain. |
| Chimneys and cowls— | 11. House. |
| 22. Rotary. | 12. Mine. |
| 23. Stationary. | 19. Window-ventilators. |

Sub-Classes in Pneumatics, with Explanatory Notes.

1. AERIAL NAVIGATION. Balloons and flying-machines and their fittings for navigating the air, but not advertising-balloons, (Class 40, Division V,) toy balloons, (Class 46, Division XV,) signal-balloons, (Class 116, Division XXII,) or balloons for raising sunken vessels, &c., (Class 114, Division XXII.)
- (31, 32, 33, 34. AIR AND GAS PUMPS. For compressing and exhausting aeriform fluids. Includes gas-pumps for ice-machines.)
31. AIR AND GAS PUMPS. HYDRAULIC. Those using water as a piston or in which a piston is operated by direct water-pressure.
32. AIR AND GAS PUMPS. MECHANICAL. Those having reciprocating pistons operated by applied mechanical power.
33. AIR AND GAS PUMPS. MERCURY. Those in which mercury or an analogous liquid acts as a piston, as in the Sprengel and Geissler pumps.
34. AIR AND GAS PUMPS. ROTARY. Those having rotating pistons. Includes rotary blowers and all separate air forcing and exhausting fans, but not fly-fans or devices for fanning the person and the like. (Sub-classes 27, 28, and 29.)
5. BELLOWES. Air-forcing devices and fittings involving flexible diaphragms, cylinders, walls, or bags, but not bellows organized for musical instruments (Class 84, Division II) or water-pumps, (Class 103, Division IX.)
22. CHIMNEYS AND COWLS. ROTARY. Cows which automatically move in whole or part to prevent a draft down through the smoke-flue.
23. CHIMNEYS AND COWLS. STATIONARY. Chimneys and cowls which are designed to prevent a draft down through the smoke-flue and have no moving part.
- * * * * *
15. SAND-BLOWERS. Rotary blowers, air-pumps, and bellows specially adapted to throw sand by a blast of air.
7. VENTILATION. CAR. Those constructions whereby fresh air is directly or through filters introduced into the cars, or foul air is forced or drawn out; but does not include cooling air, (Class 62, Division XV,) or dust-guards for car-windows, (Class 98, Division IX,) or devices involving ventilation as an incident to warming, (Class 126, Division XIX.)
10. VENTILATION. GRAIN. Devices and flues for supplying fresh air to grain in bins, bulk, and stacks, but not devices and methods for drying grain by heat, (Class 34, Division XIX.)
11. VENTILATION. HOUSE. Those constructions whereby fresh air is directly or through filters introduced into the house; or foul air is forced or drawn out; but does not include cooling air, (Class 62, Division XV,) window-ventilators as defined, (Class 98, Division IX,) or devices involving ventilation as an incident to warming, (Class 126, Division XIX.)
12. VENTILATION. MINE. Those constructions whereby fresh air is directly or through filters introduced into mines and tunnels, or foul air or fire-damp is forced or drawn out; but does not include cooling air (Class 62, Division XV) or devices involving ventilation as an incident to warming, (Class 126, Division XIX.)
19. WINDOW-VENTILATORS. Ventilators depending in whole or part on the raising or lowering of the sash, removable ventilators which are inserted in the open window under or over the sash, devices for preventing moisture on the glass, schemes for ventilating bulk-head windows, and car-window dust-guards, all when mere attachments; but does not include ventilators or dust-guards involving the construction of the window or its frame, nor window-screens, (Class 20, Division IV.)

CLASS 99.—PRESERVING. (VI.)

Sub-classes.

- | | |
|-----------------|----------------------|
| 1. Antiseptics. | 8. Exclusion of air. |
| 2. Apparatus. | 11. Food compounds. |
| 4. Cold. | 9. Fumigation. |
| 5. Desiccation. | 10. Panification. |
| 6. Egg-testers. | 12. Wood saturation. |
| 7. Embalming. | |

CLASS 100.—PRESSES. (II.)

Sub-classes.

- | | |
|------------------------------|----------------------|
| 7. Baling— | 5. Cider and wine. |
| 27. Bale-box attachments, | 6. Cloth. |
| 21. Rack bar and pinion, | 9. Flour-packers. |
| 22. Ratchet and grapple bar, | 10. Fruit-packers. |
| 29. Rebounding plunger, | 11. Fruit. |
| 23. Revolving bale-boxes, | 26. Fuel. |
| 24. Screw, | 12. Hop. |
| 25. Toggle-joint, | 13. Lard and oil. |
| 31. Windlass. | 17. Oil-press mats. |
| 2. Bale-band tighteners. | 18. Paint-exPELLERS. |
| 1. Bale-ties— | 30. Silos. |
| 19. Wire. | 14. Sugar. |
| 28. Can-filling machines. | 15. Tobacco. |
| 4. Cheese. | 16. Wool. |

CLASS 101.—PRINTING. (XVII.)

Sub-classes.

- | | |
|---------------------------|-------------------------------|
| 1. Addressing. | 23. Lithographic. |
| 2. Autographic. | 44. Matrix-making. |
| 3. Blankets. | 24. Oscillating. |
| 4. Block. | 25. Paging and numbering. |
| 5. Branding-stamps. | 26. Perforating-stamps. |
| 7. Calico and fabric. | 27. Plate. |
| 6. Card, tag, and ticket. | 28. Reciprocating. |
| 8. Chases. | 29. Registering. |
| 9. Chromatic. | 30. Rotary. |
| 10. Composing-sticks. | 31. Rules. |
| 11. Copying. | 32. Setting and distributing. |
| 12. Cylinder. | 33. Spool. |
| 13. Damping. | 34. Stereotyping. |
| 14. Delivering. | 35. Stereotype blocks— |
| 15. Electrotyping | 36. Plate holders. |
| 16. Friskets. | 37. Surfaces. |
| 17. Furniture. | 38. Types. |
| 18. Galleys. | 39. Type beds— |
| 19. Glass. | 40. Cases. |
| 20. Hand-stamps. | 41. Machines. |
| 21. Inking. | 42. Type-writing. |
| 22. Lever-presses. | 43. Warp and yarn. |

CLASS 102.—PROJECTILES. (XXII.)

Sub-classes.

- | | |
|---------------------------|----------------------|
| 1. Blasting and fuses. | 9. Marine torpedoes. |
| 2. Bomb-lances. | 11. Primers. |
| 3. Cap-boxes. | 12. Projectiles. |
| 4. Cap-filling. | 13. Rockets. |
| 19. Cartridge implements. | 14. Sabots and wads. |
| 5. Cartridge-loading. | 15. Shells. |
| 6. Cartridges— | 16. Shell-fuses. |
| 20. Electric. | 17. Shot-cartridges. |
| 7. Flasks and chargers. | 18. Torpedoes. |
| 8. Lubricating. | |

CLASS 103.—PUMPS. (IX.)

Sub-classes.

- | | |
|------------------------------------|-------------------------------|
| 45. Accumulators. | 17. Hollow piston-rod. |
| 2. Attachments. | 22. Lift. |
| 46. Brakes. | 47. Lift and force. |
| 5. Cattle. | 48. Miscellaneous parts. |
| 6. Chain. | 23. Oil. |
| 7. Compound. | 25. Oscillating. |
| 8. Compressed-air water-elevators. | 27. Pistons. |
| 10. Diaphragm. | 29. Rams. |
| 11. Double-acting. | 44. Rotary double piston. |
| 12. Double-cylinder. | 43. Rotary single piston. |
| 13. Double-piston. | 31. Sand. |
| 14. Drainage. | 32. Ship. |
| 16. Force. | 35. Windlass water-elevators. |

CLASS 104.—PUNCHING AND SHEARING. (XIII.)

Sub-classes.

- | | |
|------------------|------------------------------|
| 1. Cutting. | 5. Shears. Lever and sliding |
| 2. Punching. | 4. Shears. Rotary |
| 3. Sawing metal. | |

CLASS 105.—RAILWAY-CARS. (X.)

Sub-classes.

- | | |
|----------------------|-----------------------------|
| 1. Axle-boxes. | Cars— |
| 2. Axle-box lids. | 31. Street. |
| 3. Axle-lubricators. | 11. Changeable gage-trucks. |
| 4. Axles. | 12. Couplings. |
| 5. Baskets. | 13. Draw-bars. |
| 6. Brakes— | 17. Locomotives. |
| 7. Automatic. | 20. Platforms. |
| 8. Rail. | 21. Safety-bridges. |
| 9. Brake-shoes. | 24. Springs. |
| 10. Bumpers. | 25. Stake-holders. |
| Cars— | 26. Starters. |
| 14. Dumping. | 27. Starters and brakes. |
| 15. Freight. | 35. Straps. |
| 16. Hand. | 30. Street-car poles. |
| 19. Passenger. | 32. Trucks. |
| 22. Safety. | 33. Wheel-tenders. |
| 23. Sleeping. | 34. Wheels. |
| 28. Steam street, | |

CLASS 104.—RAILWAYS. (IV.)

Sub-classes.

- | | |
|-------------------------|--------------------------|
| 49. Buffers. | 25. Switch-stands. |
| 1. Car-replacers. | 12. Switches— |
| 2. Chairs. | 23. Automatic, |
| 63. Compensators. | 77. Automatic safety, |
| 40. Crossings. | 26. Pneumatic, |
| 3. Deadening noise. | 78. Safety, |
| 75. Deflection-stands. | 79. Spring, |
| 76. Detector-bars. | 24. Tramway. |
| 4. Elevated. | 13. Tank-feeders. |
| 50. Foot-guards. | Track— |
| 5. Frogs. | 44. Fastenings, |
| 35. Grippers— | 14. Miscellaneous, |
| 87. Automatic release, | 45. Portable, |
| 88. Friction, | 46. Stringers and ties, |
| 89. Friction-belt, | 55. Metallic. |
| 90. Roller, | Track-cleaners— |
| 91. Sprocket-wheel, | 36. Centrifugal, |
| 92. Whelp-wheel. | 37. Dumping, |
| 7. Hose-bridges. | 38. Elevators, |
| 8. Inclined plane. | 56. Explosive, |
| 39. Interlocking. | 52. Melters, |
| 9. Pneumatic— | 58. Removing weeds, |
| 93. Dispatch-tubes. | 51. Snow-plows, |
| 60. Pot-sleepers. | 57. Stock-alarms, |
| 54. Rail-braces. | 34. Wheel-fenders. |
| 11. Rail-joints. | 16. Track-layers. |
| 10. Rails. | 17. Track-platforms. |
| 21. Signals— | 59. Track-raisers. |
| 42. Automatic alarm, | 18. Traction— |
| 67. Bar, | 80. Cable-shields, |
| 71. Danger, | 81. Crossing conduits, |
| 31. Detonating, | 82. Crossing streams, |
| 68. Light, | 83. Curves, |
| 27. Pneumatic, | 53. Running and carrying |
| 69. Portable, | rope, |
| 22. Switch, | 84. Slot-closers, |
| 70. Train-order. | 85. Slot-switches, |
| 94. Signals, Automatic— | 86. Take-ups, |
| 72. Setting apparatus, | 48. Transfer-tables, |
| 73. Tappets, | 64. Truck-changers, |
| 74. Trips. | 19. Turn-tables, |
| 61. Sledways. | 47. Underground, |
| 95. Switch-chairs. | 62. Yards and plants. |
| 96. Switch-rods. | |

CLASS 62.—REFRIGERATION. (XXVIII.)

Sub-classes.

- | | |
|---------------------------|-----------------------------|
| 1. Air-cooling apparatus. | 8. Implements. |
| 2. Beer-coolers. | 10. Refrigerators. |
| 3. Corpse-coolers. | 11. Refrigerator-buildings. |
| 4. Ice-cream freezers. | 12. Refrigerator-cars. |
| 5. Ice-crushers. | 13. Water-coolers. |
| 6. Ice-machines. | 14. Wine-coolers. |
| 7. Ice picks and shavers. | |

CLASS 108.—ROOFING. (IV.)

Sub-classes.

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|-------------------|-----------------------|
| 1. Battening. | 5. Roofs. |
| 2. Eaves-troughs. | 6. Slate and shingle. |
| 3. Fenders. | 7. Tile. |
| 4. Metallic. | |

CLASS 109.—SAFES. (XX.)

Sub-classes.

- | | |
|-------------------|--------------------|
| 1. Burglar-proof. | 3. Safe bolt-work. |
| 2. Fire-proof. | |

CLASS 111.—SEEDERS AND PLANTERS. (I.)

Sub-classes.

- | | |
|-------------------------------|---------------------------|
| 1. Broadcast— | 19. Grain-drill cleaners. |
| 2. Hand, | 24. Land-markers. |
| 3. Revolving hoppers, | 25. Pivoted seed-cups. |
| 4. Walking. | Planters— |
| 5. Check-row. | 6. Corn, |
| 8. Cups on belt. | 7. Cotton, |
| 9. Cups on disk. | 16. Foot, |
| Drills— | 20. Hand— |
| 35. Adjustable rank, | 21. Oscillating, |
| 18. Grain, | 22. Reciprocating, |
| 36. Walking. | 23. Rotating, |
| 10. Drills and broadcast com- | 27. Potato— |
| bined. | 28. Walking, |
| 11. Drill-teeth. | 32. Walking— |
| 12. Elastic feed-wheels. | 33. Vibrating hoppers. |
| 34. Fertilizer-distributors— | 26. Plungers. |
| 13. Hand, | 29. Preparing seed. |
| 14. Revolving hoppers, | 37. Rolling hoppers. |
| 15. Walking. | 31. Screw-feed. |
| 17. Force-feed. | |

CLASS 182.—SEWERAGE. (IV.)

Sub-classes.

- | | |
|--------------------------------|-------------------------------|
| 1. Backwater and animal gates. | 5. Man-holes and catch-basins |
| 2. Cleaning. | 6. Mechanical treatment. |
| 3. Construction. | 7. Systems. |
| 4. Flushing. | |

CLASS 112.—SEWING-MACHINES. (XXIV.)

Sub-classes.

- | | |
|-------------------------------|--------------------------------|
| 35. Attachment-holders. | 16. Rufflers and gatherers. |
| 1. Binders. | 17. Running-stitch. |
| 2. Bobbin-winders. | 18. Setters and threaders. |
| 41. Book-sewing. | 31. Sewing hats. |
| 3. Braiders and corders. | 19. Sewing looped fabrics. |
| 43. Broom-sewing. | 32. Sewing on buttons. |
| 4. Button-hole. | 42. Sewing rugs. |
| 5. Chain and double chain. | 20. Sewing shoes. |
| 7. Embroidering. | 21. Short-thread. |
| 8. Feeding. | 22. Shuttle-machines. |
| 36. Glove-sewing machines. | 23. Shuttles and bobbins. |
| 9. Guides. | 24. Special machines. |
| 10. Hemmers. | 25. Straw. |
| 34. Methods. | 26. Take-npe |
| 29. Miscellaneous parts. | 39. Tensions. |
| 11. Needles. | 33. Thread-cutters. |
| 37. Needle-clamps. | 6. Trimmers. |
| 13. Presser-feet and lifters. | 27. Tuck creasers and markers. |
| 14. Quilting. | 12. Tucking-guides. |
| 38. Revolving hooks. | 40. Turning fabrics. |
| 15. Revolving-hook machines. | 28. Wax-thread. |

Sub-Classes in Sewing-Machines, with Explanatory Notes.

35. ATTACHMENT-HOLDERS. Devices adapted to secure different kinds of attachments in proper position relative to the sewing mechanism.
1. BINDERS. Attachments for guiding a binding and the fabric, to the edge of which it is to be secured, to the sewing mechanism.
2. BOBBIN-WINDERS. Attachments for winding or filling the bobbins or spools of shuttles and rotary hoods.
41. BOOK-SEWING. Machines and appliances for holding, feeding, and stitching signatures in book-binding.
3. BRAIDERS AND CORDERS. Attachments for guiding braids or cords to the sewing mechanism.
43. BROOM-SEWING MACHINES. For stitching brooms with cord, wire, &c.
4. BUTTON-HOLE. Machines and attachments for sewing over-edge or zigzag stitches for working the edges of button-holes or fabrics, or ornamenting fabrics.
5. CHAIN AND DOUBLE CHAIN. Machines for forming chain or loop stitches with one thread and double chain or double loop stitches with two threads, respectively.
7. EMBROIDERING. Machines and attachments for ornamenting fabrics with thread.
8. FEEDING. Includes improvements which relate to feeding mechanisms only.
36. GLOVE-SEWING MACHINES. Machines for sewing the seams of gloves.
9. GUIDES. Attachments for guiding fabrics to the sewing mechanism.
10. HEMMERS. Attachments for turning hems and guiding the fabrics to be hemmed to the sewing mechanism.
34. METHODS. Particular methods of forming stitches and peculiar methods of sewing.
29. MISCELLANEOUS PARTS. Sundry devices or machines not properly classifiable under other heads.
11. NEEDLES. Sewing-machine needles only.
37. NEEDLE-CLAMPS. Devices for securing the needle to the needle-bar.
13. PRESSER-FEET AND LIFTERS. Presser-feet and devices for raising the same when the work is to be removed or inserted; also, mechanisms for automatically lifting the presser-foot at each stitch.
14. QUILTING. Machines for sewing several seams simultaneously by means of multiplex stitch-forming mechanisms; also, attachments to ordinary machines for holding fabrics to be quilted.
38. REVOLVING HOOKS. Includes improvements in hooks and loopers, oscillating or revolving, and means for attaching the same to the shaft.
15. REVOLVING-HOOK MACHINES. Machines for forming lock-stitches by means of a needle and a co-operating rotary hook which carries the needle-thread around a locking-thread from a hobbin or spool which is in most instances stationary.
16. RUFFLERS AND GATHERERS. Attachments for forming ruffling, plaiting, and shirring, either by means of a tension-plate which checks the movement of one of two strips of fabric, thus permitting the other to be moved faster by the feeding device, or by means of reciprocating blades or other moving devices.
17. RUNNING-STITCH. Machines which crimp the fabric and feed the same on to a stationary threaded needle, thus forming the ordinary hand running stitch.
18. SETTERS AND THREADERS. Attachments for properly setting the needle in the needle-bar and for threading the same.
31. SEWING HATS. Machines and attachments for sewing linings, bindings, &c., to hats.
19. SEWING LOOPED FABRICS. Special machines for uniting the edges of knitted goods by sewing.
32. SEWING ON BUTTONS. Machines and attachments for sewing buttons to fabrics.

SEWING RUGS. Includes frames, &c., upon which rugs, yarns, &c., are wound to be presented to the stitch-forming mechanism of sewing-machines.

SEWING SHOES. Machines for sewing the soles of boots and shoes to their uppers.

SHORT-THREAD. Machines other than running-stitch machines using measured lengths of thread, in contradistinction to those machines which sew with continuous threads.

SHUTTLE-MACHINES. Machines which form the lock-stitch by means of a needle and a co-operating shuttle.

SHUTTLES AND BOBBINS. Includes improvements in shuttles and bobbins, or spools for the same.

SPECIAL MACHINES. Machines for doing special kinds of work not otherwise properly classifiable.

STRAW. Machines for sewing straw braid into hats and bonnets.

TAKE-UPS. Includes improvements which relate to take-up devices only.

TENSIONS. Includes improvements which relate to tension devices only.

THREAD-CUTTERS. Devices for cutting the threads when the work is to be removed from the machine.

TRIMMERS. Attachments for trimming off the edges of the work simultaneously with the sewing.

TUCK CREASERS AND MARKERS. Attachments for creasing or marking the work simultaneously with the formation of a seam, to indicate where the fabric is to be folded to form the succeeding tuck.

TUCKING-GUIDES. Guiding attachments for forming plaits.

TURFING FABRICS. Apparatus for inserting a loop or a series of loops of pile, yarn, rags, &c., through perforations made in a foundation fabric.

28. **WAX-THREAD.** Machines for sewing leather, &c., with waxed threads; also, thread-waxing devices for such machines.

CLASS 113.—SHEET-METAL WARE. MAKING (XIV.)

Sub-classes.

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|-----------------------------|---------------------------|
| 23. Burnishing. | <i>Soldering—</i> |
| 1. Cutting printers' leads. | 10. Solders. |
| 2. Edging sheets. | <i>Tubing—</i> |
| 3. Roller-tools. | 13. Curved and spouts. |
| 4. Screw-thread bending. | 14. Grooving and seaming. |
| 5. Seaming sheets. | 15. Pipe-elbows. Making |
| 24. Spinning. | 16. Straight. Making |
| 11. Tools. | <i>Vessels—</i> |
| 12. Troughs and moldings. | 17. Bending. Angular— |
| <i>Soldering—</i> | 18. Curved. |
| 6. Clamps. | 19. Seaming. Die— |
| 7. Irons— | 21. Roller. |
| 25. Heaters. | 20. Shaping. Die— |
| 8. Machines— | 23. Fillers and forcers. |
| 26. Dip. | 22. Wiring and flanging. |
| 27. Soldering. | |

CLASS 114.—SHIPS. (XXII.)

Sub-classes.

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|-----------------------------------|--------------------------------|
| 1. Anchors. | 23. Iron. |
| 2. Anchor-trippers. | 29. Leak-stoppers. |
| 3. Armor-clad. | 30. Light and air ports. |
| 4. Ballasting. | 32. Masts and spars. |
| 5. Berths, cabins, and furniture. | 46. Oil-distributors. |
| 6. Bilge-water. Discharging | 33. Raising sunken vessels. |
| 9. Building. | 34. Reefing and furling sails. |
| 10. Buildings and cable-stoppers. | 35. Sails and rigging. |
| 12. Camels. | 36. Scows. |
| 14. Center-boards and keels. | 37. Scuppers and hawse-holes. |
| 15. Cleats and belaying-pins. | 38. Steamboat-chimneys. |
| 16. Couplings and tow-lines. | 39. Steering mechanism— |
| 17. Dead-lights. | 47. Hydraulic, |
| 18. Decks and hatches. | 48. Pneumatic, |
| 19. Fire-extinguishers. | 50. Rudders, |
| 21. Floating-docks. | 49. Wheels and channels. |
| 22. Form. | 40. Submarine and torpedo. |
| 23. Gangways and bridges. | 41. Surge-relievers. |
| 24. Hanks, cringles, and hoops | 42. Travelers. |
| 25. Hawser-clamps. | 43. Turrets. |
| 26. Ice boats and breakers. | 44. Valve and port stoppers. |
| 27. Implements. | 45. Ventilating. |

CLASS 116.—SIGNALS. (XXII.)

Sub-classes.

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|--------------------|-------------------------|
| 1. Alarms— | 38. Bell-hanging— |
| Burglar— | 39. Pulls, |
| 41. Combined, | 40. Ringing. |
| 42. Detonating, | 12. Flag-staff holders. |
| 43. Miscellaneous, | 31. Indicators. |
| 44. Ringing, | 22. Semaphores. |
| 11. Fire, | <i>Signals—</i> |
| 15. Leak, | 9. Car, |
| 23. Shoal. | 13. Fog, |
| 32. Annunciators. | 18. Nautical, |
| 33. Bells— | 19. Pneumatic, |
| 34. Call, | 20. Pyrotechnic. |
| 35. Door, | 26. Speaking-tubes. |
| 36. Letter-box, | 27. Station-indicators. |
| 37. Sleigh. | |

CLASS 117.—SILK. (XXI.)

Sub-classes.

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|-----------------|----------------|
| 1. Assorting. | 5. Silk. |
| 2. Cleaning. | 6. Stretching. |
| 3. Cocooneries. | 7. Throwing. |
| 4. Doubling. | 8. Winding. |

CLASS 118.—SPINNING. (XXI.)

Sub-classes.

- | | |
|-----------------------------|---------------------------------|
| 1. Bobbin and cop builders. | 27. Spindles and appurtenances. |
| 2. Bobbins. | Spindles and bearings— |
| 26. Clearers. | 15. Bolsters, |
| 4. Cop-tubes. | 19. Combined bearings, |
| 5. Domestic. | 20. Sleeve whirls and stand- |
| 6. Doubling. | ards, |
| 7. Drawing and evening. | 25. Spindles and bearings, |
| 23. Drawing rollers. | 21. Steps. |
| 17. Drawing stop mechanism. | 24. Spindle-driving devices. |
| 28. Drawing trumpets. | 12. Stopping. |
| 29. Fliers. | 22. Top-roll saddles. |
| 8. Hemp, flax, and hair. | 13. Throstles and caps. |
| 9. Mules and jacks. | 14. Twisting-heads. |
| 10. Ring-frames. | 16. Yarn-controllers. |
| 11. Rings and travelers. | |

CLASS 120.—STATIONERY. (V.)

Sub-classes.

- | | |
|-----------------------------|-------------------------------|
| 4. Bill-files. | 20. Pen and pencil cases. |
| 5. Blotters. | 21. Pen racks and cleaners. |
| 6. Calendars. | 22. Pencils. |
| 7. Copy-holders. | 23. Pencil-clasps. |
| 39. Desk-rulers. | 24. Pencil-holders |
| 9. Erasers. | 25. Pencil-sharpeners. |
| 11. Fountain-pens. | 26. Post-office boxes. |
| 12. Hand-rests. | 28. Scholars' companions. |
| 13. Inkstands. | 29. Slate and blackboard rub- |
| 37. Knife erasers. | bers. |
| 3. Lead and crayon holders. | 30. Sponge-cups. |
| 36. Paper-clips. | 35. Stylographic pens. |
| 17. Paper-weights. | 32. Ticket-cases. |
| 18. Pens. | 33. Ticket-reels. |
| 19. Pen-holders. | |

CLASS 160.—STEAM AND VACUUM PUMPS. (XVIII.)

No sub-classes.

CLASS 132.—STEAM-BOILERS. (XVIII.)

Sub-classes.

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|-----------------------|---------------------------------|
| 1. Attachments. | 10. Incrustation. |
| 2. Cleaners— | 11. Indicators. |
| 31. Scrapers, | 12. Introducing smoke and gases |
| 30. Steam or air jet. | 13. Rotary. |
| 3. Coverings. | 32. Safety devices. |
| 5. Circulation. | 14. Sectional. |
| 22. Feeders. | 15. Separators. |
| 6. Fire-tube. | 16. Superheaters. |
| 7. Flashers. | 17. Tubes and fines. |
| 8. Flue and tubular. | 4. Vapor-generators. |
| Heating feed-water— | 23. Vertical. |
| 29. Furnace-gases, | 27. Water-tube— |
| 20. Steam, | 28. Coil. |
| 21. Steam-injected. | 18. Water fire-boxes. |

CLASS 110.—STEAM-BOILER FURNACES. (XVIII.)

Sub-classes.

- | | |
|----------------------|------------------------------|
| 14. Attachments. | 6. Grates and grate-bars— |
| 1. Bagasse. | 10. Hollow. |
| 2. Draft-regulators. | 9. Pulverized-fuel. |
| Furnace-feeding— | 12. Smoke and gas returning. |
| 3. Air, | 7. Spark-arresters— |
| 4. Fuel. | 13. Conductors. |
| 5. Furnaces. | |

CLASS 121.—STEAM-ENGINES. (XVIII.)

Sub-classes.

- | | |
|-----------------------------|----------------------------|
| 1. Attachments. | <i>Engines—</i> |
| Condensers— | 51. Single acting— |
| 25. Injector, | 52. Compound. |
| 26. Surface. | 19. Steam-steering. |
| 46. Cylinder relief-valves. | 6. Exhaust mechanism. |
| <i>Engines—</i> | 27. Exhaust regenerated. |
| 2. Beam, | 23. Mufflers. |
| 47. Bell-ringer, | <i>Packing—</i> |
| 3. Compound, | 28. Compound and textile, |
| 5. Direct-acting, | 12. Metallic piston, |
| 7. Fire, | 29. Rod, |
| 16. Hammer, | 32. Steam-joint. |
| 9. Locomotive, | 53. Pistons. |
| 35. Multiple-cylinder, | 23. Speed-governors— |
| 45. Multiple-piston, | 37. Centrifugal, |
| 11. Oscillating, | 38. Marine, |
| 13. Portable, traction, and | 42. Pressure. |
| dummy, | 54. Steano sanding device. |
| 17. Pumping— | 20. Traps— |
| 49. Duplex. | 43. Expansion. |
| 18. Rock-drilling, | 21. Valve-gear— |
| 14. Rotary— | 44. Link, |
| 30. Concentric-piston, | 45. Rod, |
| 31. Eccentric-piston, | 33. Shifting-eccentric— |
| 36. Impact. | 55. Automatic. |
| 34. Oscillating-piston, | 56. Tripping cut-off. |
| 41. Reciprocating-piston, | |
| 50. Wabbling-piston, | |

CLASS 136.—STEAM-ENGINE VALVES. (XVIII.)

Sub-classes.

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|--------------------|---------------------|
| 1. Balanced-slide— | 6. Puppet. |
| 13. Double, | 12. Reversing. |
| 14. Roller. | 7. Rotary. |
| 2. Cut-off. | 9. Safety. |
| 3. Gage-cocks. | 8. Slide. |
| 4. Governor. | 10. Steam-actuated. |
| 5. Piston. | 11. Throttle. |

CLASS 161.—STEAM WATER-ELEVATORS. (XVIII.)

No sub-classes.

CLASS 125.—STONE-WORKING. (XV.)

Sub-classes.

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|----------------------------------|-----------------------------|
| 2. Channeling-machines. | 12. Millstone paint-staffs. |
| 3. Chucks for rock-drills. | 13. Millstone-picks. |
| 4. Diamond-tools. | 14. Mining-machines. |
| 5. Dressing slate. | 15. Monuments. |
| 6. Dressing stone. | 18. Sawing stone. |
| 10. Drills. | 19. Tools. |
| 11. Millstone-dressing machines. | |

CLASS 186.—STORE SERVICE. (XII.)

Sub-classes.

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|-------------------------|-----------------------|
| 3. Buffers. | 2. Propulsion. |
| 4. Carriers. | 10. Store service. |
| 5. Carriers. Wheeled | 7. Switches. |
| 6. Elevators and drops. | 9. Vending apparatus. |
| 1. Gravity. | 8. Ways. |

CLASS 126.—STOVES AND FURNACES. (XII.)

Sub-classes.

- | | |
|----------------------------|---------------------------------|
| Boilers— | Heaters— |
| 1. Agricultural, | 53. Steam. |
| 16. Domestic— | 32. Heating-drums. |
| 17. Steamers, | 38. Hot-air registers. |
| 84. Stand. | Ovens— |
| Burners— | 4. Bakers', |
| 79. Hay and straw, | 19. Domestic. |
| 49. Refuse. | 87. Paint-breamers. |
| 9. Coffee and tea pots. | Pans— |
| 12. Corn-peppers. | 2. Ash, |
| 13. Dampers— | 3. Bake, |
| 14. Automatic. | 80. Frying. |
| 95. Dough-raisers. | 94. Pipe-hangers. |
| 20. Fenders. | 45. Platforms. |
| 21. Fire-dogs. | 47. Pot and lid lifters. |
| 22. Fire-places— | 81. Pots and kettles. |
| 89. Blowers. | 48. Ranges. |
| 68. Fire-backs, | 51. Shovel, tongs, and pokers. |
| 23. Fronts, | 83. Snow and ice melters. |
| 24. Grates, | 72. Steam-radiator attachments. |
| 70. Hot-air. | 85. Steam-radiators. |
| 25. Fire-pots and linings. | 54. Steaming-tables. |
| 27. Foot-warmers. | 55. Stove doors and windows. |
| 90. Fuel-boxes. | 56. Stove-hoods. |
| Furnaces— | 57. Stove-legs. |
| 76. Cremation, | 58. Stove lids and tops. |
| 37. Hot-air— | 59. Stove-pipes. |
| 86. Steam, | 60. Stove-pipe shelves. |
| 43. Magazine, | 61. Stove-pipe thimbles. |
| 46. Portable. | 62. Stove-shelves. |
| 28. Glue-pots. | Stoves— |
| 29. Grates— | 10. Cooking— |
| 96. Adjustable, | 11. Hearths, |
| 98. Compound-movement, | 41. Magazine, |
| 97. Cut-offs, | 50. Reservoir, |
| 102. Raking-attachment, | 71. Steam, |
| 99. Reciprocating, | 66. Gas, |
| 100. Rocking-bar, | 69. Heating— |
| 78. Rotary, | 92. Central air-tube, |
| 101. Vertical-movement. | 34. Horizontal-body, |
| 31. Gridirous. | 33. Hot-air, |
| Heaters— | 35. Open-front, |
| 5. Barrel, | 36. Panel, |
| 73. Car— | 93. Parlor, |
| 75. Pendent, | 39. Lamp, |
| 74. Steam, | 44. Magazine— |
| 15. Dish, | 42. Fire-place, |
| 26. Flat-iron, | 64. Vapor. |
| 40. Lunch, | 63. Tea-kettles. |
| 82. Solar, | 88. Waffle-irons. |
| 52. Soldering-iron, | |

CLASS 127.—SUGAR AND SALT. (II.)

Sub-classes.

- | | |
|--------------------------|----------------------------|
| 1. Bleaching cane-juice. | 19. Grainiug and draining. |
| 2. Bone-black. | 11. Mixers. |
| 3. Centrifugal machines. | 12. Molds and carriages. |
| 4. Confectionery. | 13. Pill-machines. |
| 6. Cube sugar. | 14. Refining salt. |
| 5. Cutters and crushers. | 15. Refining sugar. |
| 7. Defecating. | 16. Salt-making. |
| 8. Diffusion apparatus. | 17. Sugar-making. |
| 9. Evaporating-pans. | 18. Vacuum-pans. |
| 10. Glucose. | |

CLASS 128.—SURGERY. (XX.)

Sub-classes.

- | | |
|-------------------------------|--------------------------------|
| 2. Atomizers. | 23. Miscellaneous. |
| 33. Baby-jumpers— | 16. Movement cure. |
| 34. Walkers. | 17. Nasal douches. |
| 3. Bandages. | 18. Nipples. |
| 4. Breast pumps. | 19. Nursing-bottles. |
| 32. Capsule-machine. | 20. Obstetrics. |
| 5. Catamenial sacks. | 21. Pessaries. |
| 9. Depurators. | 22. Pharmaceutical. |
| 35. Dumb-bells and clubs. | 23. Scarificators and lancets. |
| 10. Ear. | 24. Speculums. |
| 36. Exercising-machines. | 25. Syringes. |
| 11. Eye. | 26. Trusses. |
| 13. Inhalers and respirators. | 27. Veterinary. |
| 15. Medical spoons. | |

CLASS 129.—TANNING. (XI.)

Sub-classes.

- | | |
|---------------------|-------------------|
| 7. Dressing. | 4. Tanning. |
| 2. Preparing hides. | 5. Tanners' tools |
| 3. Stretching. | 6. Tan-vats. |

CLASS 178.—TELEGRAPHY. (XVI.)

Sub-classes.

- | | |
|-----------------------------|--------------------------|
| Telegraphs— | Telegraphs— |
| 46. Automatic, | 55. Quadruplex, |
| 45. Circuits and systems, | 56. Railway-car, |
| 47. Dial, | 63. Reed. |
| 48. Duplex, | 10. Circuit-closers. |
| 49. Dynamo, | 12. Condensers. |
| 50. Fire, | 29. Keys. |
| 103. Fire alarms and extin- | 30. Lightning-arresters. |
| guishers, | 35. Morse registers. |
| 51. Multiplex, | 41. Relays and sounders |
| 52. Perforating, | 42. Repeaters. |
| 54. Printing, | 69. Transmitters. |

CLASS 179.—TELEPHONY. (XVI.)

Sub-classes.

- | | |
|-----------------------------|---------------------------|
| 82. Anti-induction devices. | Telephones— |
| 81. Conductors Anti-induct- | 62. Radiophones, |
| ive | 77. Relays and repeaters, |
| Telephones— | 100. Supports, |
| 57. Calls, | 85. Switch-boards, |
| 58. Details, | 71. Switches, |
| 59. Electric, | 64. Systems— |
| 60. Magnetic, | 101. Automatic. |

CLASS 130.—THRASHING. (XXV.)

Sub-classes.

- | | |
|---------------------------------|------------------------------|
| 1. Band-cutters and feeders. | Grain-separators— |
| 31. Cane-strippers. | 18. Oat, seed, and garlic, |
| 2. Clover-hullers. | 16. Rotary screens, |
| 3. Corn-cribs. | 19. Screens and riddles, |
| 4. Corn-husking implements. | 15. Shaking screens. |
| 5. Corn-husking machines. | Straw-carriers— |
| Corn-shellers— | 21. Endless aprons, |
| 6. Breast and cylinder, | 22. Overhung rakes, |
| 7. Disk-action, | 23. Reels, |
| 9. Ear-grasping, | 24. Shaking tables, |
| 10. Implements, | 20. Stackers, |
| 4. Peripheral action. | 25. Vibrators, |
| 12. Fans and regulators. | 26. Walking-rakes. |
| 13. Flax-thrashers. | Thrashing-machines— |
| 32. Fruit and vegetable separa- | 27. Cylinder-machines, |
| tors. | 29. Dust-conveyers, |
| 14. Granaries and bins. | 28. Flail-machines, |
| Grain separators— | 30. Vine and seed strippers. |
| 17. Gravity, | |

CLASS 131.—TOBACCO. (II.)

Sub-classes.

- | | |
|---------------------------------|---------------------------|
| 1. Boxes, cases, and pouches. | 8. Leaf-treating machine. |
| 2. Cigars, cigarettes, and car- | 30. Moistening apparatus. |
| tridges. | 9. Molding cigars. |
| 18. Cigar-bundling machines. | 10. Mouth-pieces. |
| 3. Cigar-cutters. | 11. Packing-machines. |
| 4. Cigar holders and stands. | 12. Pipes and stems. |
| 5. Cigar-machines— | 13. Pipe-cleaners. |
| 23. Continuous filler, | 14. Plug-making. |
| 24. Roller, | 15. Plugs. |
| 25. Stationary-belt, | 31. Smoking-tobacco. |
| 26. Traveling-belt. | 22. Smoking-tubes. |
| 16. Cigar-makers' implements. | 16. Snuff-manufacture. |
| 20. Cigar-perforators. | 32. Substitutes. |
| 27. Coloring and flavoring. | Tobacco-cutters— |
| 28. Coloring and flavoring ma- | 33. Pivoted-knife, |
| chines. | 34. Reciprocating, |
| 6. Curing. | 35. Rotary. |
| 29. Dressing-machines. | 21. Tobacco-hangers. |
| 7. Granulating. | 36. Wrappers. |

CLASS 132.—TOILET. (V.)

Sub-classes.

- | | |
|--------------------------|---------------------------|
| 1. Barbers' appliances. | 8. Mustache-guards. |
| 2. Bathers' appliances. | 9. Nail and ear cleaners. |
| 3. Combs. | 14. Pins. |
| 4. Crimping and curling. | 11. Toilet-cases. |
| 5. Hair-pins. | 12. Tooth-picks. |
| 6. Hair and wigs. | 13. Tweezers. |
| 7. Jewel-boxes. | |

CLASS 47.—TREES, PLANTS, AND FLOWERS. (II.)

Sub-classes.

- | | |
|----------------------------|-------------------------------|
| 2. Bouquet-holders. | 14. Plant and tree culture. |
| 4. Flower pots and stands. | 8. Plant and tree protectors. |
| 6. Grafting. | 10. Propagation. |
| 13. Hedge-training. | 11. Sap-spouts. |
| 7. Hop-culture. | 12. Trellises. |

CLASS 135.—UMBRELLAS AND CANES. (V.)

Sub-classes.

- | | |
|--------------------------------|-------------------------------|
| 2. Canes. | 9. Runners and notches. |
| 3. Combined cane and umbrella. | 10. Tip-cups. |
| 4. Covers. | 13. Umbrellas, Folding— |
| 5. Drip-cups. | 14. Self opening and closing. |
| 7. Handles and sticks. | 12. Supporters. |
| 8. Rihs and stretchers. | |

CLASS 27.—UNDERTAKING. (XX.)

Sub-classes.

- | | |
|----------------------|-------------|
| 1. Biers. | 3. Coffins. |
| 2. Burial apparatus. | |

CLASS 146.—VEGETABLE CUTTERS AND CRUSHERS. (II.)

Sub-classes.

- | | |
|------------------------|----------------------------------|
| 8. Apple-parers. | Cutters— |
| 16. Bunching-machines. | 11. Rotary. |
| Crushers and graters— | 2. Fruit-squeezers. |
| 15. Reciprocating. | 3. Nut-crackers. |
| 9. Rotary. | 14. Peelers and washers. |
| Cutters— | 6. Pitters, corers, and eye-cut- |
| 12. Bread. | ters. |
| 7. Reciprocating, | 5. Seeders. |

CLASS 152.—WAGON, CAR, AND TRACK IRONS. (XIII.)

Sub-classes.

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|----------------------------------|---------------------------------|
| 1. Car axles and boxes. Making | 8. Repairing and capping rails. |
| 2. Car and locomotive irons. | 9. Tire-heating furnaces. |
| 3. Carriage clips and shackles. | 10. Tire-upsetting. |
| 4. Carriage-irons. Miscellaneous | 11. Track-irons. Miscellaneous |
| neous | 12. Wagon axles and boxes. |
| 5. Car-wheels and tires. | Making |
| 6. Fifth-wheels. Making | 13. Wagon tires and fellies. |
| 7. Railway-chairs. | Making |

CLASS 141.—WASHING APPARATUS. (XXVII.)

Sub-classes.

- | | |
|--------------------------------|---------------------------|
| 6. Barrel-washers. | 10. Dish-cloth holders. |
| 7. Bottle and can washers. | 11. Dish-drainers. |
| 9. Dish-cleaners. | 12. Pitching casks. |
| 8. Dish cleaners and drainers. | 3. Tumbler-washers. |
| Combined | 5. Wool-washing machines. |

CLASS 137.—WATER-DISTRIBUTION. (IX.)

Sub-classes.

- | | |
|--------------------------|--------------------------------|
| 1. Aquariums. | 13. Hydrants and plugs. |
| 32. Check-valves. | 14. Irrigating and sprinkling. |
| Cocks and faucets— | 16. Mains and pipes. |
| 26. Compound, | 17. Nozzles. |
| 4. Reciprocating valves, | Pipe-couplings— |
| 5. Sliding gates, | 28. Detachable, |
| 27. Tank, | 34. Detachable and flexible. |
| 6. Tube-compressors, | 29. Permanent, |
| 7. Turning plugs. | 30. Valved. |
| 9. Cut-offs and spouts. | 18. Sampling-tubes. |
| 10. Filters. | 20. Siphons. |
| 11. Fountains. | 21. Tanks. |
| 12. Funnels. | 31. Water-supply hose-holders. |
| 33. Hose-patches. | |

CLASS 139.—WEAVING. (XXI.)

Sub-classes.

- | | |
|----------------------------|----------------------------|
| 47. Bag-turning-machines. | Looms— |
| 5. Carpet-rag looper. | 39. Wire. |
| 6. Chenille— | 42. Pattern-chains. |
| 40. Machines. | 21. Pickers. |
| 8. Cross-weaving. | 22. Picker-checks. |
| 9. Fabrics. | 24. Reeds and reed-making. |
| 41. Fringe-machines. | 25. Shedding. |
| 10. Fringes. | 27. Shuttles— |
| 13. Heddle-machines. | 44. Cop-cell and cover, |
| 14. Heddles. | 45. Float-detecting. |
| 16. Jacquard mechanisms. | 46. Guides and tensions. |
| 18. Looms— | 28. Shuttle-boxes. |
| 1. Bag, | 29. Shuttle-checks. |
| 2. Basket, | 30. Shuttle-guards. |
| 3. Button-hole, | 31. Shuttle-motions— |
| 7. Circular, | 48. Fly, |
| 11. Hair-cloth, | 49. Positive. |
| 12. Hand, | 43. Shuttle-threaders. |
| 15. Irregular, | 33. Special machines. |
| 17. Lappet, | 34. Stopping. |
| 19. Narrow-ware, | 35. Take-ups and let-offs. |
| 20. Needle, | 36. Temples. |
| 23. Pile-fabric, | 37. Tying-in warps. |
| 32. Slat, cane, and straw, | 38. Weft-forks. |

CLASS 157.—WHEELWRIGHT-MACHINES. (XXIX.)

Sub-classes.

- | | |
|--------------------------|--------------------------|
| 1. Axle-gages. | 8. Tire-setters. |
| 2. Boring hubs. | 9. Wheelwright-machines. |
| 3. Carriage-bow setters. | |

CLASS 170.—WIND-WHEELS. (XXVIII.)

Sub-classes.

- | | |
|--------------------------|--------------------------------|
| 4. Automatic regulators. | Wind-wheels— |
| 5. Gearing. | 2. Vertical feathering-blades. |
| 6. Power-transmitters. | 3. Vertical solid-wheel. |
| Wind-wheels— | |
| 1. Horizontal, | |

CLASS 140.—WIRE-WORKING. (XIV.)

Sub-classes.

- | | |
|-------------------------------|------------------------------|
| 1. Barbing— | 21. Feeding and tension |
| 12. Sheet-metal, | 13. Heddles. Making |
| 22. Tools. | 14. Joining. |
| 3. Bending. | 15. Reels and spools. |
| 4. Bending and coiling. | 16. Tools. |
| 5. Bending and twisting. | 17. Wring bottles and corks— |
| 6. Coiling. | 18. Brushes and cards, |
| 7. Covering. | 19. Wood— |
| 8. Cutting and straightening. | 11. Fences, |
| 9. Fabrics— | 23. Fencing. |
| 10. Making, | |
| 20. Working. | |

CLASS 143.—WOOD-SAWING. (XXIX.)

Sub-classes.

- | | |
|-------------------------|---------------------------------|
| 11. Log-turners. | Sawing-machines— |
| 15. Saw-bucks. | 32. Reciprocating-saw— |
| 25. Saw-guards. | 21. Scroll, |
| 26. Saw-guides. | 13. Resawing, |
| 16. Saw-hanging. | 20. Shingle— |
| Sawing-machines— | 33. Horizontal-saw, |
| 1. Band-saw. | 28. Tubular-saw. |
| 4. Circular-saw— | 17. Saw-mill appliances. |
| 22. Angular, | 34. Saw-mill carriages. Feed |
| 6. Fire-wood, | 35. Saw-mill carriages. Offset- |
| 23. Radial, | ting |
| 24. Traveling. | 18. Saw-mill dogs. |
| 29. Drag, Crank— | 9. Saw-mill set-works. |
| 30. Lever. | 14. Saws. |
| 5. Edgers. | 19. Saw-teeth. |
| 3. Mills, Circular-saw— | 27. Saw-table gages. |
| 31. Auxiliary-saw, | |
| 12. Reciprocating-saw, | |

Sub-Classes in Wood-Sawing, with Explanatory Notes.

11. LOG-TURNERS. Machines for turning logs by power.
15. SAW-BUCKS.
25. SAW-GUARDS. Shields to prevent accidents.
26. SAW-GUIDES. Devices to prevent vibration of the saw.
16. SAW-HANGING. Devices for holding saws on arbors or in gates.
1. SAWING-MACHINES. BAND-SAW. Machines using an endless flexible saw.
4. SAWING-MACHINES. CIRCULAR-SAW. For sawing on a table with a circular saw without a power-driven carriage.
22. SAWING-MACHINES. CIRCULAR-SAW. ANGULAR. Circular saws arranged to cut in planes inclined to each other.
6. SAWING-MACHINES. CIRCULAR-SAW. FIRE-WOOD. Circular sawing machines adapted to cross-cut rough sticks.
23. SAWING-MACHINES. CIRCULAR-SAW. RADIAL. Circular saws arranged to make cuts radial to the log
24. SAWING-MACHINES. CIRCULAR-SAW. TRAVELING. Revolving saw is carried to the work.
29. SAWING-MACHINE. DRAG. CRANK. Drag-saws in which there are crank-connections for reciprocating the saw.
30. SAWING-MACHINES. DRAG. LEVER. Drag-saws in which the saw is reciprocated by a lever and connecting devices.
5. SAWING-MACHINES. EDGERS. Machines having two or more circular saws on a shaft, usually adjustable relatively to each other.
3. SAWING-MACHINES. MILLS. CIRCULAR-SAW. For sawing logs. A power-driven carriage is usually present. The saw cuts through the log from side to side.
31. SAWING-MACHINES. MILLS. CIRCULAR-SAW. AUXILIARY-SAW. Circular saws enter the log above and below in the same plane.
12. SAWING-MACHINES. MILLS. RECIPROCATING-SAW. Machines with carriages for feeding logs or timber to a reciprocating saw, which is generally hung in a gate.
32. SAWING-MACHINES. RECIPROCATING-SAW. Includes machines in which a reciprocating saw is present except saw-mills, scroll-sawing machines, and drag-saws.
21. SAWING-MACHINES. RECIPROCATING-SAW. SCROLL. Jig-sawing machines where the feed is by hand or under the immediate control of the operator.
13. SAWING-MACHINES. RESAWING. For dividing sawed stuff from edge to edge, usually at an angle and generally with gages at each side of the work.

20. SAWING-MACHINES. SHINGLE. For sawing beveled pieces, and having devices for shifting the bolt so as to produce the bevel.
33. SAWING-MACHINES. SHINGLE. HORIZONTAL-SAW.
28. SAWING-MACHINES. TUBULAR-SAW. The saw is a hollow cylinder.
17. SAW-MILL APPLIANCES. Attachments—as brakes, wheels, log-decks, saw-dust conveyers, and carriages.
34. SAW-MILL CARRIAGES. FEED.
35. SAW-MILL CARRIAGES. OFFSETTING. Setting the carriage away from the saw before returning.
18. SAW-MILL DOGS. Devices to clamp the log to the saw-carriage.
9. SAW-MILL SET-WORKS. Mechanism for moving a log on its carriage. Includes head-blocks and knees.
14. SAWS. Wood-saws with solid teeth.
19. SAW-TEETH. Insertible teeth and fastenings.
27. SAW-TABLE GAGES. For guiding the work on the table.

CLASS 142.—WOOD-TURNING. (XXIX.)

Sub-classes.

- | | |
|------------------------|----------------------------|
| 9. Irregular forms. | 3. Lathe appliances. |
| Lathes— | 8. Oval forms. |
| 12. Automatic-spindle, | 16. Polygonal forms. |
| 2. Gage, | Regular forms— |
| 13. Many spindle, | 17. Lateral-movement, |
| 14. Single-chuck, | 18. Longitudinal-movement. |
| 15. Tubular-cutter. | |

Sub-Classes in Wood-Turning, with Explanatory Notes.

9. IRREGULAR FORMS. Lathes having as essential elements revolving work-spindle, revolving pattern, and a bearing-surface, which rests on the pattern and controls the movement of the work-spindle or the rotary cutter.
12. LATHES. AUTOMATIC-SPINDLE. Lathes in which the spindles close on the work, usually for turning spools, buttons, &c.
2. LATHES. GAGE. Lathes having a revolving work-spindle, a traveling cutter, and fixed pattern for guiding the cutter.
13. LATHES. MANY-SPINDLE. Lathes with a series of spindles, which usually move past a series of cutters.
14. LATHES. SINGLE-CHUCK. Lathes in which the work is chucked to a single spindle.
15. LATHES. TUBULAR-CUTTER. A hollow revolving cutting-mandrel, through which the work is fed.
3. LATHE APPLIANCES. Attachments for wood-lathes.
8. OVAL FORMS. TURNING. Spindle of lathe has double or eccentric motion.
16. POLYGONAL FORMS. TURNING. Lathes in which a rotating stick is given of substantially a polygonal form in cross-section, because of the intermittent character of the rotation or because of the large circle of rotation.
17. REGULAR FORMS. TURNING. LATERAL-MOVEMENT. Simple lathes in which the cutter moves laterally toward the work.
18. REGULAR FORMS. TURNING. LONGITUDINAL-MOVEMENT. Same as above, with cutters made to move lengthwise of the stick, or nearly so.

CLASS 144.—WOOD-WORKING MACHINES. (XXIX.)

Sub-classes.

- | | |
|--|-----------------------------|
| 1. Bending wood. | Mortising— |
| 2. Boring— | 61. Rotary cutters. |
| 77. Portable. | 19. Osier-peelers. |
| 48. Boring and reaming. | 20. Packing shingles. |
| 78. Box-nailing machines. | 22. Pencil-wood. Making |
| 79. Bundling firewood. | 23. Planer attachments. |
| 20. Bundling shingles. | Planers— |
| 6. Clothes-pin machines. | 64. Beveling, |
| 8. Comb-teeth. Cutting | 65. Rotary-cylinder, |
| 80. Cutters, Bits and non-rotary stocks— | 66. Rotary-disk, |
| 49. Chain, | 25. Sliding. |
| 9. Rotary-stock. | 27. Planing and matching. |
| 10. Cutting dye-wood. | 28. Planing and sawing. |
| 11. Cutting gears. | 63. Presser bars and rolls. |
| 14. Dovetailing. | 67. Punching-cutters. |
| 81. Feed mechanism— | 29. Rossing bark. |
| 82. Rolls. | 68. Routing— |
| 50. Gaining. | 4. Pattern. |
| 51. Machine-tables. | Sashes and blinds— |
| 16. Match-splints. Making | 31. Making, |
| 75. Match-trays. | 74. Tenoning. |
| 83. Mitering-knife— | 69. Shaving. Fixed-knife |
| 84. Saw. | Slicers— |
| Molding— | 70. Beveling, |
| 85. Axles, | 71. Reciprocating, |
| 52. Clamped-work, | 72. Rotary and oscillating. |
| 53. Hand-feed, | 36. Sliveriog. |
| 54. Lateral-feed, | 37. Special work. |
| 55. Pattern-feed, | 38. Splitting and bundling. |
| 56. Special-feed, | 73. Tenoning and boring. |
| 57. Straight-feed. | 40. Universal joiners. |
| Mortising— | 45. Working rattan. |
| 58. Auger-cutters, | 46. Wiring blinds. |
| 59. Chisel and auger cutters, | 42. Wooden pins. Making |
| 60. Chisel-cutters, | 43. Wooden trays. Making |
| | 44. Wood ornamentation. |

Sub-Classes in Wood-Working Machines, with Explanatory Notes.

1. BENDING WOOD. Includes machines for bending sticks, devices holding them bent, and machines for rendering sticks pliant for bending by steaming or otherwise.
2. BORING. Machines which operate with a simple rotary bit or bits.
77. BORING. PORTABLE. Small boring-machines, operated usually by hand, adapted to be moved along the work.
48. BORING AND REAMING. Machines which have reamers for enlarging, as well as augers for boring, holes.
78. BOX-NAILING MACHINE. Machines for nailing the parts of a box together.
79. BUNDLING FIRE-WOOD.
20. BUNDLING SHINGLES.
6. CLOTHES-PIN MACHINES. For removing the wood between the legs of clothes-pins.
8. COMB-TEETH. CUTTING. Machines for slitting the spaces between the comb-teeth, usually circular saws with intermittent feed devices for the comb-blanks.
80. CUTTERS. BITS AND NON-ROTARY STOCKS. Includes bits or irons for cutter-heads for use in machines; also, non-rotary cutter-heads.
49. CUTTERS. CHAIN. Endless chains carrying cutting-blades.
9. CUTTERS. ROTARY-STOCK. Rotary heads with cutting-blades, (other than saws and augers.)
10. CUTTING DYE-WOOD. Chip-making machines.
11. CUTTING GEARS. Machines with cutters for forming gear-teeth, and generally a step-by-step feed.
14. DOVETAILING. Machines with rotary cutters or saws arranged at angles to the wood, which is fed in straight lines.
81. FEED MECHANISM. Means for feeding the work to the cutters in wood-working machines.
82. FEED MECHANISM. ROLLS. The work is fed by means of driven rolls.
50. GAINING. Machines with rotary cutting-tools having their axes parallel (or nearly so) to the surface in which a transverse groove is cut.
51. MACHINE-TABLES.
16. MATCH SPLINTS. MAKING
75. MATCH-TRAYS. A device for receiving, clamping, adjusting, or preparing the splints for dipping, &c., and which may be connected to or disconnected from the match-splint machine proper.
83. MITERING-KNIFE. Includes miter-boxes and like devices for cutting bevels on wood by means of knives.
84. MITERING-SAW. The cutter is a saw.
85. MOLDING AXLES. Shaping wooden axles.
52. MOLDING. CLAMPED-WORK. The blank is clamped and the cutter advanced to operate on it.
53. MOLDING. HAND-FEED. The material is shaped by rotary cutters on axes parallel to the surface cut, the feed being under immediate control of the operator.
54. MOLDING. LATERAL-FEED. Machines with rotary cutters on axes parallel to the surface operated on, the blank being fed to the cutter and then withdrawn.
55. MOLDING. PATTERN-FEED. The material is shaped by cutters, the feed being in a direction fundamentally regular but modified by transverse movements produced by patterns, cranks, or cams.
56. MOLDING. SPECIAL-FEED. The work is shaped by rotary cutters, the feed being in curved, tortuous, or irregular lines.
57. MOLDING. STRAIGHT-FEED. The work is passed by shaping-cutters in a straight line.
58. MORTISING. AUGER-CUTTERS. Slots are formed by augers, which first bore a hole to the required depth and then move sideways, cutting at the side.
59. MORTISING. CHISEL AND AUGER CUTTERS. Augers followed or accompanied by chisels which enlarge and square the hole bored.
60. MORTISING. CHISEL-CUTTERS. Machines with reciprocating chisel.
61. MORTISING. ROTARY CUTTERS. For cutting mortises by means of rotary, oscillating, or chain cutters, the axis of the cutter being parallel to the surface of the wood.
19. OSIER-PEELERS.
20. PACKING SHINGLES.
22. PENCIL-WOOD. MAKING
23. PLANER ATTACHMENTS. Miscellaneous attachments for planing-machines.
64. PLANERS. BEVELING. For planing tapered articles—as shingles, &c.—by rotary cutters.
65. PLANERS. ROTARY-CYLINDER. Planer with rotary cutter-head on axis parallel with face of bed; knives on cylindrical surface of cutter.
66. PLANERS. ROTARY-DISK. Planers with rotary disk having knives on the flat surface, which is parallel with the bed of machine. Traversing planers.
25. PLANERS. SLIDING. Planers with fixed or reciprocating knives, the work being fed to the knife or the knife reciprocated over the work.

27. PLANING AND MATCHING. Planers with matcher-heads attached.
28. PLANING AND SAWING. Planers with circular saws or edges attached.
63. PRESSERS BARS AND ROLLS.
67. PUNCHING-CUTTERS. Machines for forming cylinders, cones, &c., by cutters which surround the article, cutting its outside, and machines for cutting patterns out of veneers.
29. ROSSING BARK.
68. ROUTING. Rotary cutters with their axes at right angles to the surface operated on, and capable of lateral movement over such surface, for panel-raising, &c.
4. ROUTING. PATTERN. Routing-machines for following the contour, usually with a tracer attached to the cutter.
31. SASHES AND BLINDS. MAKING. Machines for.
74. SASHES AND BLINDS. TENONING. Cutting round tenons on blind-slats by rotary cutters, against which the slats rotate.
69. SHAVING. FIXED-KNIFE. The work fed continuously to the stationary knife.
70. SLICERS. BEVELING. Machines with reciprocating or rotary splitting-knives, to which the work is fed by mechanism.
71. SLICERS. RECIPROCATING. Machines with reciprocating splitting-knives.
72. SLICERS. ROTARY AND OSCILLATING.
36. SLIVERING. Machines with sets of fine knives for making tooth-picks, excelsior, &c.
37. SPECIAL WORK. Machines for special purposes, (as gluing, driving parts together, fastening cane-seats, felling trees, &c.)
38. SPLITTING AND BUNDLING. Includes splitting devices for making fire-wood with or without bundling attachments.
73. TENONING AND BORING. Cutting round tenons by hollow augers which may be replaced or accompanied by boring-augers.
40. UNIVERSAL JOINERS. Machines for performing several operations simultaneously or successively.
45. WORKING RATTAN.
46. WIRING BLINDS.
42. WOODEN PINS. MAKING
43. WOODEN TRAYS. MAKING
44. WOOD ORNAMENTATION. By cutting or embossing.

CLASS 145.—WOOD-WORKING TOOLS. (XXIX.)

Sub-classes.

- | | |
|-------------------------|---------------------------|
| 1. Augers— | 30. Floor sets. |
| 25. Countersink. | 11. Gages— |
| 2. Auger-handles— | 31. Weather-board. |
| 26. Ratchet. | 23. Handsaws. |
| 3. Bench-dogs. | 12. Hammers and hatchets. |
| 4. Bench-planes— | 13. Hollow augers. |
| 29. Gage attachments. | 15. Nail-extractors. |
| 5. Bit-stocks— | 16. Saw-handles. |
| 27. Ratchet. | 17. Screw-drivers— |
| 6. Box-openers. | 28. Ratchet. |
| 7. Box-scrapers. | 18. Spokeshaves. |
| 22. Cant-dogs. | 19. Tools. |
| 8. Chisels. | 20. Tool-handles— |
| 9. Clamps. | 32. Fastenings. |
| 10. Chalk-line holders. | 21. Work-benches. |

SUBJECTS OF INVENTION.

Subjects of invention are divided into one hundred and eighty-eight classes, and assigned for examination to the thirty Examining Divisions of this Office, as follows:

DIVISION I.—EXAMINER FOX.*Classes.*

- 39. Fences.
- 55. Harrows and Diggers.
- 97. Plows.
- 111. Seeders and Planters.

DIVISION II.—EXAMINER BLODGETT.*Classes.*

- 6. Bee-Culture.
- 17. Butchering.
- 119. Care of Live Stock.
- 31. Dairy.
- 100. Presses.
- 127. Sugar and Salt.
- 131. Tobacco.
- 47. Trees, Plants, and Flowers.
- 146. Vegetable Cutters and Crushers.

DIVISION III.—EXAMINER MACLEAN.*Classes.*

- 7. Brewing and Fermenting.
- 96. Coating with Metal.
- 124. Distillation.
- 48. Gas.
- 75. Metallurgy.
- 148. Metal Tempering, Annealing, and Cementation.

DIVISION IV.—EXAMINER POND.*Classes.*

- 14. Bridges.
- 37. Excavating.
- 159. Fire Escapes and Ladders.
- 183. Fire-Proof Buildings.
- 61. Hydraulic Engineering.
- 72. Masonry.
- 104. Railways.
- 108. Roofing.
- 182. Sewerage.

DIVISION V.—EXAMINER BURKE.*Classes.*

- 11. Book-Binding.
- 41. Fine Arts.
- 63. Jewelry.
- 84. Music.
- 95. Photography.
- 120. Stationery.
- 132. Toilet.
- 135. Umbrellas and Canes.

DIVISION VI.—EXAMINER ANTISELL.*Classes.*

- 8. Bleaching and Dyeing.
- 23. Chemicals.
- 52. Explosives.
- 71. Fertilizers.
- 44. Fuel.
- 149. Hides, Skins, and Leather. Chemical Treatment of
- 167. Medicines.
- 87. Oils, Fats, and Glue.
- 91. Painting.
- 99. Preserving.

DIVISION VII.—EXAM'R GOLDSBOROUGH.*Classes.*

- 56. Harvesters.

DIVISION VIII.—EXAMINER SKINNER.*Classes.*

- 5. Beds.
- 107. Bread, Cracker, and Lozenge Making.
- 155. Chairs.
- 156. Curtains, Shades, and Screens.
- 45. Furniture.
- 46. Games and Toys.
- 65. Kitchen and Table Articles.

DIVISION IX.—EXAMINER TRYON.*Classes.*

- 1. Aeration and Bottling.
- 4. Baths and Closets.
- 169. Fire-Extinguishers.
- 138. Hydraulic Motors.
- 103. Pumps.
- 137. Water-Distribution.

DIVISION X.—EXAMINER SANDERS.*Classes.*

- 21. Carriages and Wagons.
- 105. Railway-Cars.

DIVISION XI.—EXAMINER CHAPMAN.*Classes.*

- 12. Boots and Shoes.
- 24. Clasps and Buckles.
- 54. Harness.
- 60. Hose and Belting.
- 69. Leather.
- 129. Tanning.

DIVISION XII.—EXAM'R AUGHINBAUGH.

Classes.

- 187. Elevators.
- 57. Hoisting.
- 64. Journal-Boxes, Pulleys, and Shafting.
- 184. Lubricators.
- 74. Machine Elements.
- 185. Mechanical Motors.
- 186. Store Service.

DIVISION XIII.—EXAMINER JAYNE.

Classes.

- 86. Arms and Projectiles. Making
- 59. Chains, Staples, and Horseshoes.
- 53. Hardware-Making.
- 10. Metal Bolts, Nuts, Rivets, and Screws.
- 77. Metal Boring and Drilling.
- 78. Metal-Forging.
- 79. Metal Personal Wear. Making
- 80. Metal-Rolling.
- 76. Metal Tools and Implements. Making
- 134. Metal Tubing and Wire.
- 82. Metal Turning. Planing, and Milling.
- 85. Nails and Spikes.
- 163. Needles and Pins.
- 164. Punching and Shearing.
- 152. Wagon, Car, and Track Irons.

DIVISION XIV.—EXAMINER STOCKING.

Classes.

- 153. Metal-Bending.
- 22. Metal-Founding.
- 150. Packing and Storing Vessels.
- 113. Sheet-Metal Ware. Making
- 140. Wire-Working.

DIVISION XV.—EXAMINER HUDSON.

Classes.

- 166. Artesian and Oil Wells.
- 106. Artificial Stone, Lime, and Cement.
- 18. Caoutchouc and Minor Plastics.
- 25. Clay and Pottery.
- 154. Composite Roofing.
- 38. Felting and Hat-Making
- 49. Glass.
- 92. Paper-Making.
- 94. Paving.
- 125. Stone-Working.

DIVISION XVI.—EXAMINER BROWN.

Classes.

- 176. Electric Lighting.
- 177. Electric Signaling.
- 178. Telegraphy.
- 179. Telephony.

DIVISION XVII.—EXAMINER COOKE.

Classes.

- 93. Paper-Manufactures.
- 101. Printing.

DIVISION XVIII.—EXAMINER FOWLER.

Classes.

- 123. Air and Gas Engines.
- 188. Fluid-Pressure Railway-Brakes.
- 50. Fluid-Pressure Regulators.
- 162. Injectors and Ejectors.
- 160. Steam and Vacuum Pumps.
- 122. Steam-Boilers.
- 110. Steam-Boiler Furnaces.
- 121. Steam-Engines.
- 136. Steam-Engine Valves.
- 161. Steam Water-Elevators.

DIVISION XIX.—EXAMINER STEWARD.

Classes.

- 126. Stoves and Furnaces.

DIVISION XX.—EXAMINER WILKINSON.

Classes.

- 3. Artificial Limbs.
- 16. Builders' Hardware.
- 30. Cutlery.
- 32. Dentistry.
- 70. Locks and Latches.
- 109. Safes.
- 128. Surgery.
- 27. Undertaking.

DIVISION XXI.—EXAMINER RANDALL.

Classes.

- 13. Brakes and Gins.
- 19. Carding.
- 26. Cloth-Finishing.
- 28. Cordage.
- 66. Knitting and Netting.
- 117. Silk.
- 118. Spinning.
- 139. Weaving.

DIVISION XXII.—EXAMINER SEATON.

Classes.

- 180. Accouterments and Baggage.
- 40. Advertising.
- 9. Boats.
- 42. Fire-Arms.
- 43. Fishing and Trapping.
- 115. Marine Propulsion.
- 89. Ordnance.
- 102. Projectiles.
- 114. Ships.
- 116. Signals.

DIVISION XXIII.—EXAM'R F. A. SEELY.

Classes.

TRADE-MARKS.

LABELS.

- 181. Acoustics.
- 33. Drafting.
- 35. Educational Appliances.
- 58. Horology.
- 73. Measuring-Instruments.
- 88. Optics.

DIVISION XXIV.—EXAMINER PIERCE.

Classes.

- 165. DESIGNS.
- 2. Apparel.
- 29. Crinoline and Corsets.
- 112. Sewing-Machines.

DIVISION XXV.—EXAMINER WYNNE.

Classes.

- 83. Mills.
- 130. Thrashing.

DIVISION XXVI.—EXAM'R GEO. D. SEELY.

Classes.

- 171. Electricity. Generation.
- 172. Electricity. Motive Power.
- 173. Electricity. Conductors.
- 174. Electricity. Medical and Surgical.
- 175. Electricity. Special Applications.

DIVISION XXVII.—EXAMINER GOULD.

Classes.

- 15. Brushing and Scrubbing.
- 51. Grinding and Polishing.
- 68. Laundry.
- 141. Washing Apparatus.

DIVISION XXVIII.—EXAM'R TOWNSEND.

Classes.

- 34. Driers.
- 168. Farriery.
- 81. Metal-Working Tools.
- 151. Nut and Bolt Locks.
- 98. Pneumatics.
- 62. Refrigeration.
- 170. Wind-Wheels.

DIVISION XXIX.—EXAMINER TYLER.

Classes.

- 20. Carpentry.
- 147. Coopering.
- 157. Wheelwright-Machines.
- 143. Wood-Sawing.
- 142. Wood-Turning.
- 144. Wood-Working Machines.
- 145. Wood-Working Tools.

DIVISION XXX.—EXAMINER WOODWARD.

Classes.

- 67. Lamps and Gas-Fittings.

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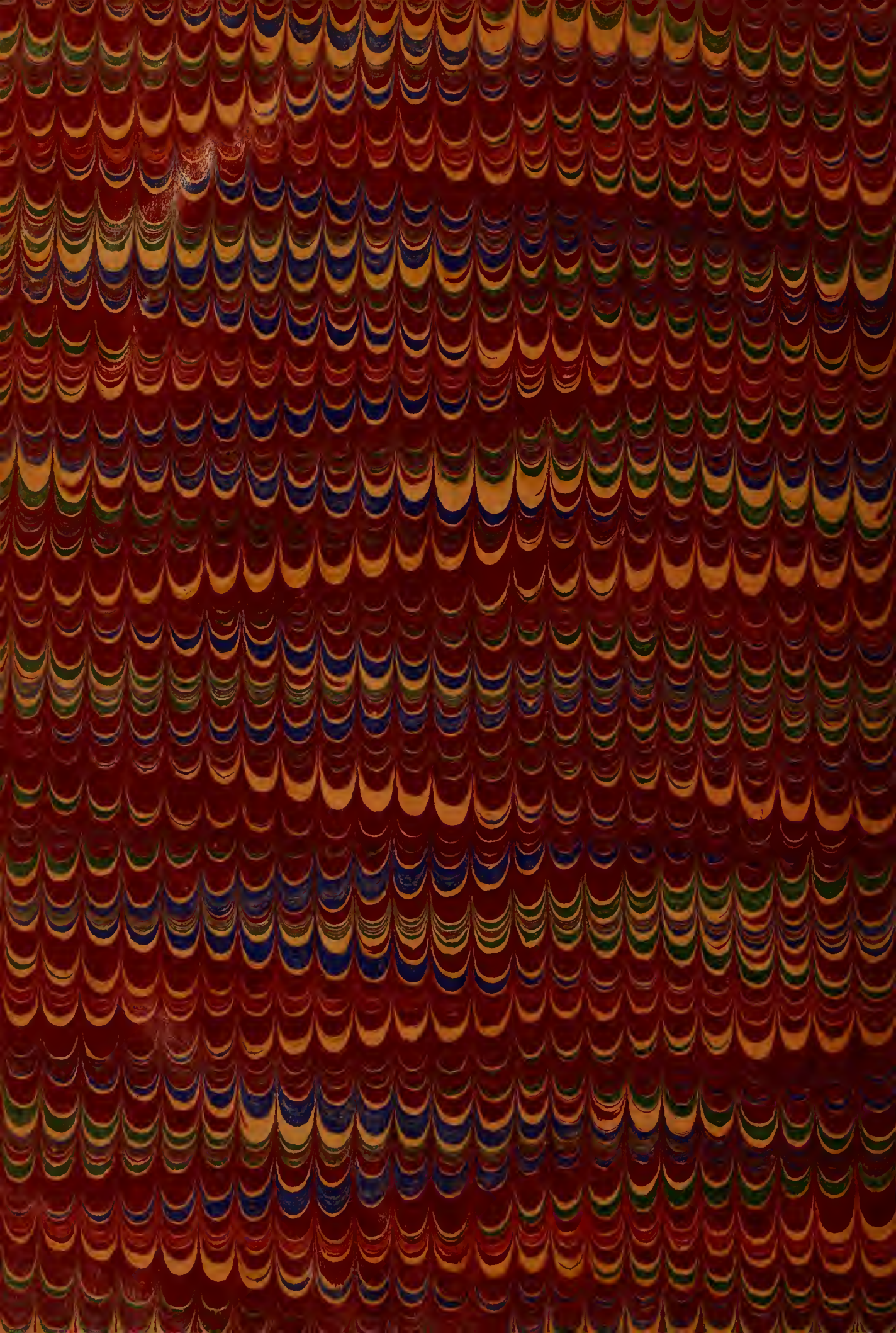
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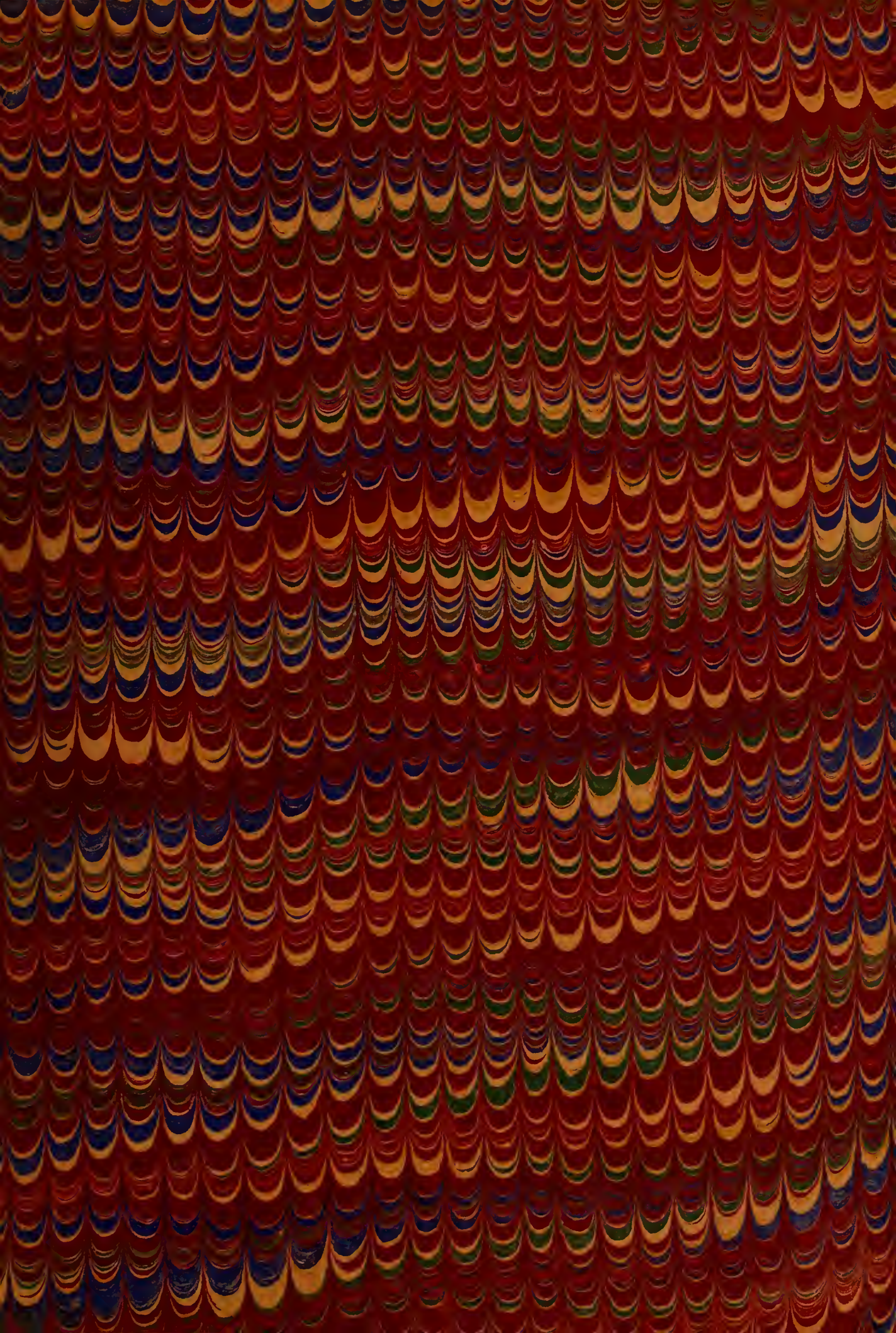
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